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ORAL HYGIENE

A JOURNAL FOR DENTISTS

EDITED BY GEORGE EDWIN HUNT M.D. D.D.S.

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VOLUME I. NUMBER XI.

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A WORD WITH THE READER

This number of ORAL HYGIENE was suggested by Miss Evaline Wright Nelson of East Liverpool, Ohio. ORAL HYGIENE is meant, primarily, to be a journal for dentists, but it prints every month articles that are of interest to everyone. Miss Nelson chanced to see one or two copies and was impressed with the great good which might come from getting out a number especially written for those who know nothing about dentistry except what they may have learned from occasional visits to the office of a dentist. Her suggestion was adopted and this number is the result.

The term "laity" is one used to designate the people outside of a profession as distinguished from the people in that profession, and since this number of the magazine is meant for the people outside of the dental profession, we call it, therefore, "The Laity Number."

In reading it I would advise that you start at the first and read each article as you come to it. They are all good and they are all true, the writers and I earnestly believe. You will find certain articles that are adapted to certain cases. Such as are suitable should be used by you in instructing those less well informed. That is what the number is for. To spread the gospel of mouth cleanliness. The paper called "A Talk With the Children," for instance, should be read by the teacher to her scholars.

A glossary of the professional terms used in the papers may be found on page 863. The writers have tried to avoid the use of technical terms as much as they could but it was impossible to avoid them altogether.

—THE EDITOR.

THE ECONOMIC VALUE OF A TOOTH

By GEORGE EDWIN HUNT, M. D., D. D. S., Indianapolis, Ind., Dean of the Indiana Dental College

When I tell you that the loss of a tooth from the jaws of a person in California is a matter which affects the prosperity of a person, any person, in New York, you will probably think I am crazy or jesting, but I am not.

The prosperity of a nation depends on the efficiency of the producers in the nation. At their highest degree of efficiency, with every producer doing his work to the limit of his working ability, the nation would be enjoying the greatest material prosperity possible. No nation ever has reached

this point because the efficiency of all its producers is never at the maximum.

Many things lower the efficiency of producers, but nothing contributes more to this than the physical condition of the producer. Any departure from a perfect physical condition, lowers the efficiency of a person. This may be carried to the point where a producer becomes a non-producer. No matter how valuable a producer a person may be, when they are sick in bed they become non-producers. When a person is, at his or her best, only a partial producer, that is, unable to do as much work as the average for that kind of work, it does not take much physical deterioration to make them non-producers.

All non-producers are clothed, fed and warmed at the expense of producers. Criminals, insane persons, the aged, children, the crippled and deformed, and the sick, are all non-producers and maintained by the work of the producers.

More bodily ills are due to what we eat, how much we eat, and how we eat it, than any other one cause. All the long train of digestive disorders from plain "stomach-ache" to appendicitis, all diseases of faulty cell-life in the body, such as cancers, pyorrhoea alveolaris, rheumatism, gout, and a host of other diseases, in fact, the great majority of all human diseases may be traced to the same fundamental starting point of: What you eat, how much of it you eat, and how you eat it.

The first two divisions of this subject are of great interest but space will only allow me to dwell on the third division and that very briefly.

Digestion of food begins in the mouth. For this part of digestion to be accomplished perfectly, the food must be thoroughly chewed. The food can not be thoroughly chewed unless the teeth in the mouth are in good condition, and every tooth lost or diseased diminishes the ability of that person to chew the food thoroughly. If the food is not properly chewed, digestion is not perfect. If digestion is not perfect, assimilation is not perfect. If assimilation is not perfect, the person is not in perfect health. A person in imperfect health has decreased in ability as a producer. A partial producer decreases the material wealth of the nation. Therefore, the loss of a tooth is more than a loss to the individual from whose mouth the tooth was removed. It is a distinct loss to the nation. Which is what I started out to prove to you.

CARE OF THE MOUTH DURING PREGNANCY

A Paper for Prospective Mothers and Nurses

By NELVILLE S. HOFF, D. D. S., Ann Arbor, Mich., Dean of the Dental Department, University of Michigan

TWENTY-FIVE YEARS AGO PREGNANT WOMEN EXPECTED TO SUFFER MORE OR LESS FROM TOOTHACHE and even to lose some of their teeth during this period. In fact, there are physicians today so ignorant of modern methods of oral hygiene that they ignore all proper instructions on this subject to their patients, and few trained nurses have any intelligent knowledge of their duties or opportunities in respect to the mouth conditions of their patients. But, thanks to the thorough and persistent efforts of dental scientists, it need no longer be said among intelligent people that every baby means the

loss of at least one of the mother's teeth. There can be no question but the mother's teeth are more liable to decay during the pregnant period than at any other time; but it is not because of the old theory that the lime salts in the mother's teeth were needed to make the new teeth for the baby. Teeth do not decay from their internal or nourishing sources, as the flower which withers and dies when the sap is dried up or stopped; decay of the teeth is an external process resulting wholly from outside causes. It begins and proceeds from the exposed surfaces of the teeth gradually penetrating the hard calcified tooth substance until it reaches the pulp which is the vital organ from which the tooth was built up and from which it receives all its nourishment. Even when the pulp is exposed, it may be destroyed and removed, and although the remainder of the tooth has all of its natural nourishment cut off, if the decay be stopped, as may readily be done by modern dental art, the tooth still remains a healthy and useful organ for many years. In fact, the crown of a tooth may be entirely destroyed, but if the root can be preserved in a healthy condition, it may be made about as useful as though it had never suffered an attack of decay. We can even go further and say that modern dentistry can rescue teeth whose bony support has been almost entirely dissolved away by disease, making them efficient organs of mastication. This is modern dentistry and it is one of the reasons why no tooth which has a reasonable amount of care and professional supervision should ever be lost, except from accidental causes or wilful neglect, even by a pregnant woman.

I have not space, nor would it be profitable for me to give here in detail the scientific causes and methods of tooth decay, but I can outline briefly some of the causes which can be prevented by personal effort during the time when the mother is most likely to suffer attacks of dental decay.

DECAY OR CARIES OF THE TOOTH is caused by lactic acid acting to dissolve the hard crystallized lime salts of the tooth. This acid is not natural to the mouth, which in a healthy state should be bathed in a normal saliva that is alkaline in character and has no dissolving action on the tooth substance. The acid, however, is generated in the mouth by the fermentation of deposits of food and other extraneous materials on the teeth and the mucous membranes of the tongue, gums and cheeks. It is most largely produced from deposits of sugar, starch in bread, milk, cheese, and similar foods, which are fermented and chemically disintegrated by microörganisms constantly present in the mouth, especially in unclean mouths of sickly or careless persons, who permit these food and mucous deposits to collect and remain on the teeth long enough to be decomposed.

It can therefore readily be seen that if the teeth are kept clean there can be no material to ferment, consequently no production of acid and no decay. This is the solution of the whole problem under ordinary circumstances, but the problem becomes somewhat more complex when the fermentation is not confined to the teeth and mouth, as in the case of the pregnant mother who suffers much from fermentation in the stomach, and frequent regurgitations into the mouth. There are other complications of a general physical character which are not common and would so complicate this paper that I will not here discuss them.

METHODS OF PREVENTION.—As I have indicated, clean teeth are least likely to decay; and certain food elements supply the important factors in producing the acids which cause decay. Therefore, we must place a guard over these two attacking forces. It very often happens that neither the family physician nor the family dentist is consulted until the

period of gestation is so far advanced that there is no opportunity for the dentist to make suitable fortification against the activities of these tooth-destroying agents. Just as soon as a woman knows she is pregnant she should put herself into the hands of her dentist for such repair work as is indicated and a rigid regime of oral prophylaxis and monthly inspection by the dentist should be adopted. It is a popular notion that such patients should be spared all possible nervous shocks and painful impressions during this period, and this has led in most cases to absolute neglect of the mouth and teeth so far as dental interference is concerned. If the matter is begun early enough and the dentist is made aware of conditions, there need be no great nervous shocks or hazardous undertakings. The teeth that need treatment can be cared for with a minimum of pain, and placed in such condition that they can be cared for during the critical periods by personal treatments without the possibility of harm, and so the patient be carried through the entire period without the slightest encroachment on even the gum tissues. If there are no cavities in or about the teeth for the lodgment of food materials the cleaning of the teeth by the patient is a very simple and effective process, and if the patient rigidly follows the instructions of the dentist she will be able to eat any kind of food she may desire so far as the welfare of her teeth is concerned. If they can be cleaned, and are kept clean, and are given a thorough prophylaxis treatment every thirty days by the dentist, there is little probability that they will decay, or even become sensitive, as is very often the case a few weeks before child birth.

FOR CLEANING THE TEETH a suitable brush, or set of brushes if needed, should be prescribed by the dentist, as there are few mouths in which any single form of brush, however universal and adaptable it may be, will meet all requirements. The cleansing material can be more universally indicated. A powder which will be sufficiently abrasive to scour away all adhesive deposits is essential. It should also have an alkaline reaction of decided and lasting force. These constitute the essential qualities, but it may be flavored to make it more agreeable to use, and its cleansing qualities may be increased by a small per cent of a clean soap. No drugs for antiseptic action are indicated and they may do harm by over stimulation of the gum margins. A useful powder which may be had at any druggist, is made of precipitated chalk and powdered magnesium carbonate in equal parts by bulk, to which about ten per cent of good palm oil soap should be added; a little saccharine to sweeten may be added if desired, and a few drops of oil of sassafras or wintergreen to flavor. This powder should be used every night before retiring with a vigorous brushing about all of the teeth followed by thorough rinsing with plenty of tepid water. If there develops a tendency to sensitiveness after the rinsing, some of the powder may be taken in the mouth and rubbed about the grinding teeth with the finger, especially the sensitive ones, and left there for the night. In the morning the teeth should be brushed with any one of the many good tooth pastes that can be bought of the druggists. As these are mixed with glycerine this leaves the teeth somewhat lubricated so that adhesive food materials will not stick to them as readily as when the powder alone is used; it also cuts away the adhesive mucous deposits which have taken place during the night. The teeth may be brushed again after the noon meal but no dentifrice is needed unless there is an insistent deposit of mucus on the teeth and gums, or some particularly adhesive food or corrosive medicine has been taken. Medicated mouth washes are of little value unless there is a

pathologic condition of the gums; they may, however, be used in moderation when there is a bad taste from stomach eructations. If there is need the physician sometimes prescribes a lime water mouth wash, or hydrate of magnesium to correct acidity, but these are seldom indicated when good oral prophylaxis conditions prevail.

The question of the kinds of foods the pregnant mother should avoid and those she should eat, not only as prophylactic agents, but to supply her system with the proper nutrient elements for her developing child, can not be discussed here but it is closely identified with the subject under consideration. Less sugars and starches and more bone building foods such as vegetables, cereals, milk, etc., should be used.

CARE OF THE MOUTH DURING INFANCY

A Paper for Mothers and Nurses

By NELVILLE S. HOFF, D.D.S., Ann Arbor, Mich., Dean of the Dental Department, University of Michigan

To the uninstructed it may seem unnecessary to take any steps toward preventive treatment in the mouth of the infant that its teeth may be better, but it is highly important not only that the process of teething be carefully watched but that the period of development should be in a measure kept under observation. Calcification of the first set of teeth begins about four months before the child is born, and it takes nearly a year before the process is completed.

THE NUTRITION OF THE TOOTH during the first four months of its formation must come from the mother directly as the child is yet unborn and it can have no other source of supply. It is evident then that the mother should be provided with such nutriment, in quality and amount, as may be required to furnish the growing unborn child with the lime salts needed for building up good teeth. It would, however, be a serious mistake to put the mother on an excessive bone-building diet, because this might lead to the formation of over-developed bones at the expense of other important tissues; and it would likewise be a blunder to resort to any change in diet for a short time and then revert to the old regimen. The food of this character should be taken only in slightly increased quantities, and under forms such as the mother will readily digest and assimilate without disturbing her digestive functions. Simple, wholesome living without too much worry and care and plenty of outdoor exercise will be most likely to produce good teeth formation. From this it will be seen that infant prophylaxis should be kept constantly in mind for at least four months before the child is born, not only for the child's sake but for the mother's sake also.

THE NEWLY BORN INFANT should be properly bathed and prepared for its new environment by a skillful nurse, as much depends on how the child is cared for during the first few hours of its life. One cause of the great infant mortality among the poor in crowded cities is the lack of proper care of the newly born. The modern physician recognizes the fact that during childbirth there is great liability of the mouth, throat and air passages of the child becoming filled with fluids from the womb which should be removed by irri-

gation and suction syringes. If allowed to remain fermentation and infection follows and the child is seriously handicapped at the start as its ability to get rid of even the natural waste products at this time is very feeble. The mouth and nose especially should be as effectually cleansed as possible and in some cases the stomach should be emptied with the stomach pump so that the food may not be spoiled at the very outset. The mucous membranes of the respiratory and intestinal tracts at this time are exceedingly tender and liable to injury and disease and therefore care should be exercised in using any kind of manipulative treatment. Strong antiseptics are equally objectionable and for the same reason. At the same time it is better to assume some risk than to leave these important passages clogged or unclean. The very life of the child may depend upon such measures, and its future mouth, nose and throat conditions will be greatly safeguarded thereby.

FROM BIRTH TO THE AGE OF SEVEN MONTHS is another important period which should not be neglected, for while there are no teeth present in the infant mouth during this time, they are being formed in the jaws and need proper nourishing elements in the child's food. If the child is nursed by its mother, the mother's diet should be planned so as to include those elements to be supplied through the milk to the child. This is by all means the ideal method of feeding infants, but unfortunately too many mothers delegate this function, either of necessity or from choice, to the wet nurse, or the bottle, an exceedingly unfortunate thing for the child. If the child is to be given over to a wet nurse, great care should be exercised in her selection. It is necessary to secure one in good health and whose own child is as near as possible of the same age, as otherwise the proper elements will not be supplied in the milk, and the child will suffer either from excessive or insufficient nutrition. There are, of course, other dangers to be considered, such as the transmission of disease taint. If bottle feeding is resorted to a long line of evils follow. If cows' milk be used the condition of the milk can never be definitely known; it is too rich in cow albumen, or it is not pure, or it does not contain the tooth elements wanted, and besides it is liable to be indigestible and stomach and bowel disorders may attend its use. Attempts to sterilize it destroys the valuable food elements and make it more easily fermentable, and the milk loses thereby much of its nutritional value. If prepared foods are used, they may be pure and chemically constant, but the child soon loses its appetite for them and takes no pleasure in its food; the salivary and mucous glands are not inclined to cooperate with the masticating function; they do not develop at the same time and consequently when the teeth are ready for chewing the food there is not enough saliva to prepare it for stomach digestion. A series of intestinal and systemic disturbances result which can not be cured or relieved except with medicines. I do not mean to say that children can not be well nourished by cows' milk or chemically prepared foods, but that these foods do not contain the normal tooth building materials in the best form for assimilation, and that so many serious digestive disturbances are likely to occur as to interfere with perfect calcification. The mother's milk can be made to contain all the elements in ideal form for assimilation by the child, and with less probability of introducing any detrimental functional or disease disturbances. This care of the child's feeding should be kept up until the child is weaned, which, by the way, should not be undertaken until the child can successfully masticate and insalivate the solid foods, and until the stomach and bowels are prepared to digest the new foods. Children are weaned too soon nowadays. Many

mothers give up breast feeding as soon as the infant cuts its front teeth, which, of course, is a serious mistake, as at that time there are no masticating teeth and the stomach is wholly unprepared to digest such food as may be substituted. The child is really not prepared to be thrown on its own resources in this way, much short of two years of age. If this were the rule we should have less bowel diseases of children, better permanent teeth, and less dyspepsia of adults. No child should be weaned in less than twelve months and the best results would follow if it were not less than eighteen months before weaning, or when all of the first teeth have erupted, which varies considerably as to time.

TEETHING.—There are probably more children's diseases attributed to teething between the ages of seven and eighteen months, than to any other cause, and if the causes were wholly known we should find that bad feeding was much more responsible for these conditions than erupting teeth.

There are twenty teeth in the first set and they begin to emerge from the gums at about seven months. The eruption is completed at about two years. Especially at or just before the eruption of the first tooth there is likely to be more or less irritation of the gum over the growing tooth. The child becomes very restless and irritable, the saliva flows more freely, and more or less stomach or bowel disturbances take place. It is true in this case that the erupting tooth is the primary factor in the disturbance as the growing tooth pushing its way up through the gum tissue produces local irritation and pain which in many cases is so intense as to produce, through the nervous reflexes, excessive impressions on the sense organs of the brain and the organs intimately connected with the teeth. The teething is also responsible for the excessive flow of saliva and disturbances of digestion. The result is a fretful or irritable child, swallowing an excessive amount of saliva with its food which the irritated stomach can not digest. The food very soon ferments and sets up colic, diarrhoea and a long line of infant disorders which, if not corrected, may terminate the child's life. Even if the results are not fatal they are a grave menace to the future health of the child, as all developmental processes are either checked or abnormally carried on. The result is that the child is not only uncomfortable during this period, and difficult of control, but it is losing its best opportunity to lay the foundations for future health and resistance to disease.

The process of teething should be a natural one without any of these symptoms, and physicians so look upon it, but mothers also believe that it must be painful and that they can do nothing to prevent the irritability of the child. They allow the child to suffer sometimes excessively until the tooth emerges by what is in fact a pathologic process which ought to have been prevented. There are some objections to helping this process by lancing the gum over the emerging tooth, just as there are to other surgical operations; such as the danger of infection, pain of the operation, and the danger of operating prematurely, etc., but when these conditions exist such objections, in view of the serious complications that may result, should not be allowed to prevail. Serious cases of eye and ear troubles in children and even convulsions have been relieved by simply lancing the gum over an impacted tooth. The operation of lancing the gum over an emerging tooth in a child's mouth is a simple operation that any dentist can easily perform with no great pain or shock to the child. A double or cross incision over the tooth with a pointed scimitar-shaped lancet cutting through to the tooth will relieve the congestion at once and the pain will soon subside. There may be, of course, other diseases not caused by or in any way truly associated with

erupting teeth that will not respond to such treatment. Obstructions in the nose or other parts of the breathing tract may cause severe forms of nervous irritation and may also disarrange the digestive functions; this sort of trouble is susceptible, however, to speedy relief following proper treatment. In fact, if a child can have proper food and pure air in abundance it is not likely to be seriously ill during the process of erupting teeth or to suffer from indigestion and its long list of consequent diseases.

THE IMPORTANCE OF KEEPING THE MOUTH AND NOSE CLEAN during infancy has not received as much emphasis as it should. The bones of the face and the teeth will not develop normally if the mucous membranes covering them are diseased or improperly nourished. The great trouble with most children seems to be obstructions of the nose in the form of adenoids or deviated septa, and crowded or irregularly placed teeth and enlarged tonsils, all of which can be prevented if proper attention is given to the soft tissues of the nose and mouth during the infantile or formative periods. While these interferences may seem hazardous and so technical as to be impracticable for the average mother, there is no good reason why any properly trained nurse with the aid of the physician may not easily accomplish all that is necessary at the beginning, and the mother could be taught to continue the treatment.

MOUTH TOILET FOR THE INFANT.—It is difficult to prescribe a successful mouth toilet for infants, and yet it would seem to be absolutely necessary. The pure milk from the mother's breast is often contaminated sufficiently while passing through the child's mouth to cause serious intestinal disturbances. The mouth should be cleansed by irrigation or by swabbing it with some soft absorbent cotton on a probe saturated with a mild disinfectant.

The throat and nose should also occasionally be gently washed out with a suitable antiseptic. The bottle nipples, if used, should be frequently renewed and always thoroughly cleaned after use. During the teething period rubber or other hard rings given the child to chew upon should be kept clean and the mouth should be carefully watched to determine if any irritation is being produced by the mechanical use. It is questionable whether these hard substances should be used at all as excessive irritation may produce a tough growth over the tooth, making its penetration by the growing tooth more difficult. If the child's fingers can be kept clean they make better tooth cutters, even though this should establish the thumb-sucking habit, which, however, can be corrected easily, and the drooling of the saliva is much better than to have the child continually swallowing it to interfere with its digestion. The mouth, nose and throat should be kept clean and free from all infectious diseases of their mucous membranes; good teeth and breathing organs will be the result, and the child will have a chance to develop to its normal capacities.

THERE ARE SOME CHILDREN'S DISEASES which are generally said to be caused by teething and which are really due to other conditions. Fevers of a nervous type may be caused by the local irritation of an erupting tooth, but they are always mild in degree and inconstant. The more serious fevers are due to the absorption of infection from the alimentary tract on account of bad feeding and should not be attributed to the erupting teeth at all; such conditions require prompt medical treatment. Diarrhoea is a common infantile complaint which is seldom due to irritable teething directly but always to some indiscretion either in the food itself or the manner of its use. Bronchial affections at this period are common, but are always traceable to undue exposure or to lack of sanitary care of the child's nose and throat, and seldom have any direct connection with teething.

Skin eruptions are more often evidence of improper feeding than expressions of nervous disorders from difficult teething. Reflex nervous disorders may begin with irritations of the teeth and the central nervous system may suffer seriously from such local causes, but ordinarily these symptoms are more often traceable to general systemic influences than to the local irritation of teething.

WHEN TEETH ERUPT

The tables below give the approximate time for the teeth of the two sets to erupt. In individual cases they may come in earlier or later than the dates given as these dates are only an average.

Note that the *first permanent tooth* to erupt is the *first molar,* which is the sixth tooth from the middle line of the face and which makes its appearance when the child is about six years of age. As this tooth is being formed in the jaw from the time the child is born, some of the diseases of children, such as scarlet fever or measles, may result in its being faulty in formation. In any event, it comes into the mouth at such an early age that parents should give it especial attention. This is especially necessary as it is probably the most important tooth in the mouth so far as the future health of the child is concerned.

DECIDUOUS OR BABY TEETH.

Tooth.	Erupts.	Is shed.
Central incisors	6th to 8th month	About the 7th year
Lateral incisors	7th to 9th month	About the 8th year
Cuspids	17th to 18th month	About the 12th year
First molars	14th to 15th month	About the 10th year
Second molars	18th to 24th month	11th to 12th year

PERMANENT TEETH.

Tooth.	Erupts.
Central incisors	7th to 8th year
Lateral incisors	7th to 8th year
Cuspids	12th to 13th year
First bicuspids	10th to 11th year
Second bicuspids	11th to 12th year
First molars	6th to 7th year
Second molars	12th to 14th year.
Third molars	17th to 26th year

DISEASES OF THE MOUTH AND THEIR RELATIONS TO HEALTH

By ARTHUR H. MERRITT, D. D. S., New York, N. Y.

NATURE HAS PROVIDED HUMAN BEINGS WITH TEETH FOR THE CHEWING OF THEIR FOOD. It is in the mouth that the first, and one of the most important steps in digestion takes place, the only step, in fact, over which the individual has the slightest control. Hence the importance in nutrition of sound teeth and a clean mouth. To believe, as some do, that artificial teeth are quite as satisfactory in the mastication of food as are natural ones, is to be mistaken. By actual comparison they have been found to be ten times as inefficient. They sustain the same relation to natural teeth that a

wooden leg does to one of flesh and bones. Since, therefore, nature has provided us with teeth, and made the chewing of food an essential to our health and well being, it is important that we make an effort to preserve them. Unfortunately, the mouth and teeth are subject to certain diseases which not only tend to destroy the teeth and make the mouth unclean, but to unfavorably affect the general health.

As is true of many other diseases, it has been found that germs play an important part in causing the diseases of the mouth. Under the most favorable conditions the human mouth may be regarded as being an almost ideal culture medium for germ life. In fact, it presents in point of temperature, moisture, nutritive material, etc., an almost perfect breeding place. Upward of twenty varieties, many of them dangerous to life and health, have been found to thrive and multiply in the mouth under unsanitary conditions. One investigator who has given years to the study of mouth bacteria, has estimated the number in one unclean mouth at 1,140,000,000. Neglect to properly care for the mouth, means therefore, an unclean and unhealthy mouth, a condition which may in turn seriously affect the general health by interfering with nutrition.

Among the factors which contributes to the uncleanliness of the mouth may be mentioned decay of the teeth, pyorrhea alveolaris or "Riggs Disease," chronic abscesses, commonly called "ulcerated teeth" or "gum boils," irregular teeth, partially erupted "wisdom teeth," tartar, inflamed and bleeding gums, artificial teeth, crowns, bridges, etc.

DECAY OF THE TEETH.—Of all these, the most common and probably the most disastrous in its influence upon the hygiene of the mouth, is decay of the teeth. This is a disease brought about through the agency of germs which possess the property of converting starchy foods, sugar, etc., into acids. It is these acids which slowly dissolve out the inorganic portion of the enamel, after which it is only a question of time, unless cared for, when the pulp or "nerve" of the tooth becomes involved, followed by pain, death of the pulp and ultimate loss of the tooth. The rapidity with which this is accomplished will depend largely upon the cleanliness or uncleanliness of the mouth, and the resistance which the teeth or body as a whole, offers to the agents of decay. As a rule, the process is a comparatively slow one. An aching tooth does not spring into being in a day, and means nothing less than negligence long continued.

While decay of the teeth is not limited to any age, it is, nevertheless, most common in childhood, its most active period being between the ages of six and twenty. Because it makes its appearance so early in life, the temporary teeth are often involved, especially the molars, which are too often regarded by the parent as of little value because they are temporary teeth. Let it be said with all possible emphasis that no greater mistake could be made, for the decay of these teeth means not only an unclean and diseased mouth at a critical period in the life of the child, but it means inevitable irregularity of the permanent teeth. Every effort should therefore be made to preserve these teeth against decay, because more than half of them should remain in the mouth until the child is twelve years of age. This should be done not only to insure against pain and uncleanliness but for the purpose of providing the developing child with an efficient masticating apparatus.

Decaying teeth render thorough mastication impossible and establishes early in life the habit of bolting the food. Moreover, the filth which is inseparable from decaying teeth is mixed with the food and carried into the stomach as a further tax upon the digestive apparatus. In a word, decaying teeth, especially in the mouth

of a child, means poor nutrition, which in turn means poor health and a low order of efficiency.

PYORRHEA ALVEOLARIS (Rigg's Disease) is a disease that is very common among adults, being responsible for the loss of many otherwise healthy teeth, and the indirect cause of not a few ills more or less seriously affecting the general health. It attacks the tissues supporting the teeth, involving the bony socket and gums, and is characterized by loosening of the teeth, inflammation and recession of the gums and in most instances a discharge of pus from around the affected teeth. In its early stages there is little to attract the attention of the patient. It is only when the disease is well advanced that the teeth become loose and painful. There is probably no filthier disease occurring in the mouth, encouraging as it does the growth of pus producing germs, permitting the lodgment of food between the loosened teeth and discharging its purulent matter into the mouth with every act of mastication; a condition which means not only an unclean and unhealthy mouth with ultimate loss of the teeth, but eventual impairment of the health.

THE CHRONIC ABSCESS is another potent factor in the production of unsanitary mouths, a disease which is common to all ages. It is, with rare exceptions, caused by a neglect to properly care for a decaying tooth in its early stages, with a result that the pulp (nerve) becomes involved; followed by death of the tooth. If further neglected, infection takes place, attended in most instances by acute pain, swelling of the face, and eventual discharge of pus, usually within the mouth. These symptoms last two or three days, are accompanied by a rise of temperature, loss of appetite, digestive disturbances, etc. With the discharge of pus the acute symptoms subside. Occasionally this occurs without pain, but in both instances the result is the same, namely, a chronic abscess, which without proper treatment will continue to discharge. As this discharge is usually within the mouth, it, with the organisms accompanying it, finds its way into the stomach to be resorbed into the circulation. Treatment consists in the removal of the dead tooth pulp, disinfection of the root and filling of the tooth. Such abscesses are very common among children as a result of the decay of their temporary molars, eight of which are not replaced by their permanent successors until the twelfth year. In their chronic form abscesses cause little or no pain; the discharge at any one time is small and their presence is viewed with unconcern. As a result they are allowed to remain year after year, discharging their poisonous products into the mouth, being only one of several agencies which contribute to its uncleanliness.

THE INFLUENCE OF DENTAL DISEASES UPON THE GENERAL HEALTH because of the unsanitary conditions which dental diseases produce in the mouth, is much more disastrous than has generally been understood, though their effects are becoming more clear with increasing knowledge. There has long been a disposition to regard the mouth and its condition as of no consequence in its relation to health, instead of looking upon it as the gateway of nutrition; the avenue through which must pass all food upon which the nourishment of the body and the maintenance of health depends. Pure food laws are right and should be enforced, but a clean mouth is an equally important factor in the conservation of the national health.

Regarding the importance of mouth hygiene Dr. Wm. Osler says: "There is not any one single thing more important in the whole range of hygiene than the hygiene of the mouth. If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth." Dr. Wm. Hunter of London makes this statement re-

garding the effects of unsanitary mouths: "I desire to point out how common a cause of disease it is, how grave are its effects, how constantly it is overlooked and what remarkably beneficial effects can be got from its removal." Concerning the influence of such conditions upon the nose, throat and lungs Dr. Wadsworth says: "From the hygienic standpoint, the secretions of the mouth constitutes the chief, if not the only source of respiratory infections, and the infectious material is transferred from one person to another, in some cases through the air, as from sneezing or coughing, and to an even more serious extent by personal contact, or by the use in common of the various accessories of life." As it is the child who is most susceptible to decay of the teeth, with consequent unclean mouth, so it is the child who is the greatest sufferer, especially as it affects his growth and development. Concerning its effect in relation to infectious disease Dr. Henry G. Langworthy says: "A foul mouth and decaying teeth *particularly in children,* decidedly increase the chances of catching such contagious and infectious diseases as scarlet fever, diphtheria, measles and tuberculosis. A clean mouth will do much to prevent tubercle bacilli from gaining a foothold in the body."

In brief, dental diseases of whatever nature, always mean an unclean and unhealthy mouth. But they mean more than this, *and this is the important thing to be remembered,* they are the cause of other and more serious conditions, such as digestive disorders, anaemia, mal-nutrition, septic poisoning, neuralgias, etc., and predisposition to such other diseases as diphtheria, tuberculosis and pneumonia, as well as the infectious diseases of childhood, of which there are several.

THE PREVENTION OF MOUTH DISEASES is the the goal toward which all should strive, and cleanliness of the mouth is of the first importance in any effort in this direction. While cleanliness will not entirely prevent decay of the teeth, there is one thing of which we may be sure—the cleaner the mouth, other things being equal, the less liable will the teeth be to decay. Another potent factor in tooth decay is the lack of exercise given the teeth in mastication. Good vigorous use helps to keep them clean and adds appreciably to their immunity to decay. It must not be understood, however, that decay can be entirely prevented. Unfortunately this cannot be done even with the help of the dentist, whose services should be sought at frequent intervals in the interest of prevention. Decay in its beginnings, can be easily arrested without in the least impairing the usefulness of the teeth. Early treatment is also less painful and less expensive, a prime argument in its favor.

The prevention of pyorrhea alveolaris is more certain than is that of decay. Its causes are many, among them being wedging of food between the teeth, tartar, general uncleanliness of the mouth, lack of exercise of the teeth and gums; in fact, any irritation at the gum margins. Its progress is slow and in the beginning it is easily cured. Cleanliness and vigorous exercise of the teeth and gums is of the first importance in its prevention.

The chronic abscesses above described could be entirely prevented if decay of the teeth were checked in its beginning, a further argument in favor of early treatment when prevention fails. A living tooth will never abscess. Only "dead teeth ulcerate." To sum up then, three things are important in the prevention of dental diseases:

1st. Cleanliness of the mouth and teeth. As careful instructions to this end will be given by other writers in this journal, they will be omitted here.

2d. Vigorous use of the teeth and gums. Eat slowly. Chew your food thoroughly; your stomach has no teeth. By so doing

not only will the health of the mouth be improved but also digestion and nutrition.

3d. Frequent visits to the family dentist. In spite of personal care, dental diseases will occur. See to it that their earliest beginnings are discovered and checked. An ounce of prevention will be found to be of more value than the proverbial pound of cure, and less expensive.

HOW TO CLEAN THE MOUTH

Thread, Brushes, Powders, Washes and Paste

JULES J. SARRAZIN, D. D. S., New Orleans, La., Ex-Dean New Orleans College of Dentistry

THE BELIEF THAT WHEN NATURAL TEETH ARE LOST, FALSE ONES WILL BE JUST AS GOOD IS ALL WRONG, because plates only have one-tenth the power of natural teeth to chew food and prepare it for digestion. Don't wait for the condition of the mouth to become so bad that you must wear a plate, because broken down teeth and roots, and the deposits all around them, which lodge millions of disease germs, are multiplying, making every swallow going down the stomach from such a mouth a source of poison to the system, instead of being healthful food. Bridges can be made practically as useful in chewing food as natural teeth, but good bridging is seldom possible in mouths ruined by neglect.

The only safe way is to always keep a clean mouth, and the nearer we come to perfect cleanliness, the better off we are both for our health and for saving our teeth.

Very few people keep their mouths clean enough, because very few people know the value of it, and how to do it. Every time a person with a mouth full of germs talks, coughs, or sneezes, they are throwing out poison to harm other people, and it is only those who have clean, well polished teeth and healthy gums that have a good chance of escaping it. Of course, even after the germs enter the mouth, they do not always develop throughout the body, because the conditions of the blood may not be favorable to them, but it is certainly wrong to run such dreadful chances when the danger can be so easily lessened by keeping a clean mouth. Those who have learned from experience the value of a pure, clean mouth, both for comfort and for health, fully appreciate it, and when that knowledge and experience spreads throughout the world, diseases will be lessened in proportion, and years of health will be increased.

The mouth which seldom gets cleaned will usually be full of decayed teeth with disease germs in them, will have pieces of roots in, and quantities of deposits about the teeth, the germs from all of which make more and more damage in the mouth itself besides poisoning its owner and his neighbors. The mouth which gets an occasional cleansing escapes a condition quite as bad, but it is a close second to it. It is only the mouth which gets cleansed often enough, and which is cleansed in an intelligent way, which becomes a pure, healthful mouth, capable of preserving the teeth of its owner, protecting his health, and not threatening that of his neighbors.

NO DECAYED TEETH MUST BE KEPT IN THE MOUTH; EITHER THEY MUST BE FILLED, CROWNED, OR EXTRACTED. Broken down roots carry millions of disease germs about them, and must be removed. Fillings which have rough or overhanging edges, especially at the gums, are dangerous to the adjoining teeth on account of the

deposits and germs which collect at such places, and also because of the irritation caused to the gums by such conditions, bringing in time disease of the sockets and loosening of the teeth. The same thing applies to crowns, whether they carry a bridge or not; in case they have a rough, overhanging edge where they join a root, in case some part of them does not fit tightly enough around the root to prevent the slightest gap under it, or in case the edge of a crown presses into the gum, however little disease will occur. After all the conditions just mentioned have been corrected, and the mouth is in good order, it is time for the dentist to most carefully remove the slightest deposits of any kind which may still be present around any teeth, especially near and at the gums, and then begins the time when the person can take care of the mouth in a manner protecting both health and teeth. If, unfortunately, a plate must be worn, it must be cleansed just as carefully as the natural teeth, and as often, because deposits full of disease germs will otherwise form on it, too. A plate should never be worn while one sleeps. During that time it should bathe in water with a teaspoonful of borax or baking soda in it, or in the same mouth wash used for the natural teeth.

THE TIME AT WHICH IT IS MOST NECESSARY TO CLEANSE THE MOUTH IS AT BED TIME. If one sleeps with a mouth in which remnants of food are decomposing, and this begins a short time after eating, the mouth being quiet during sleep, the cheeks and the tongue not rubbing the gums and teeth, and the saliva not flowing to give them the bath intended by nature, germs do their worst because they are not disturbed. Therefore, if you cannot clean your mouth more than once in twenty-four hours, it is at bed time that you should do it. But, really, only one bed time cleansing in twenty-four hours must be looked at in the light that "a half loaf is better than no loaf at all." That one regular, thorough, every night bed time cleansing will certainly do much valuable good is true, but in order to obtain the best results, more frequent cleansings are needed. Next to the bed time cleansing, the most important one is in the morning after breakfast. This enables us to avoid the decomposition of food remnants in the mouth going on for a whole day; germs multiplying more and

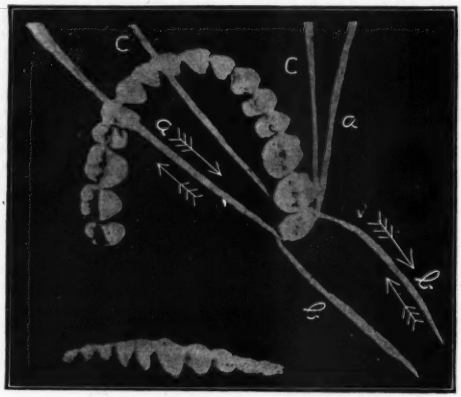


Fig. a, b, c.
By courtesy of Dental Summary.

more as hours pass. There is really no reason why any one could not cleanse their mouth just before they leave their home in the morning. Getting up only five minutes earlier will allow of it.

The ideal way is for one to cleanse the mouth and teeth after each time they eat, and this should only mean after each regular meal, besides bed time, because the habit of sweetmeats and lunches between meals is, if possible, more hurtful to the teeth than it is to health. This does not mean that you must run from the table to the tooth brush. It takes some time for decomposition of food remnants to begin, so that if you will take your very first chance to cleanse your teeth after a meal, you will be in time. When conditions are such that a tooth brush is away at the time, a piece of waxed floss thread, or a very small rubber band (either of them clean) can be rubbed between the teeth (not a tooth pick) and if this be followed by plenty of strong rinsing, it will do great good. This is surely another instance when "half a loaf is far better than no loaf at all."

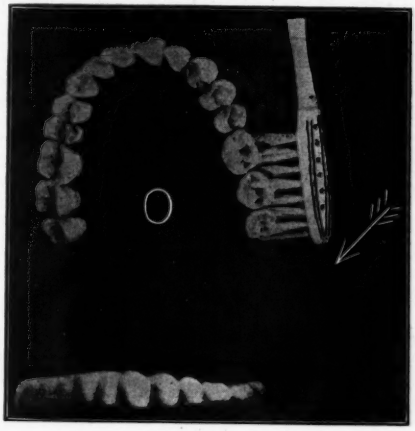


Fig. 0.
By courtesy of Dental Summary.

WHEN CLEANSING THE MOUTH, THE FIRST STEP should be to thoroughly rub against each tooth in the mouth, where it comes out of the gum, both above and below, a piece of waxed floss thread, being careful to skip neither the front nor the back of a tooth which stands by itself, that is, without one right next to it. Just because there is plenty of room for soft substances left from chewing sticking around a lonely tooth, the danger becomes still greater, this also being true of teeth which stand at the end of rows in the back. Nothing is better to rub between the teeth than John D. Cutter's Waxed Floss, which is flat, and on that account gives more contact. If the teeth are long, the "X" grade of that floss is best. If they are short, the "S" grade. The best substitute to this floss, where it cannot be obtained conveniently and easily, is what is known as rope embroidery silk. Rub it on a piece of beeswax, and wind it on a burnt match and it is always ready for use. It is cheap, and nearer in good effect to Cutter's floss than anything else.

Let Fig. a, b, c, guide the rub-

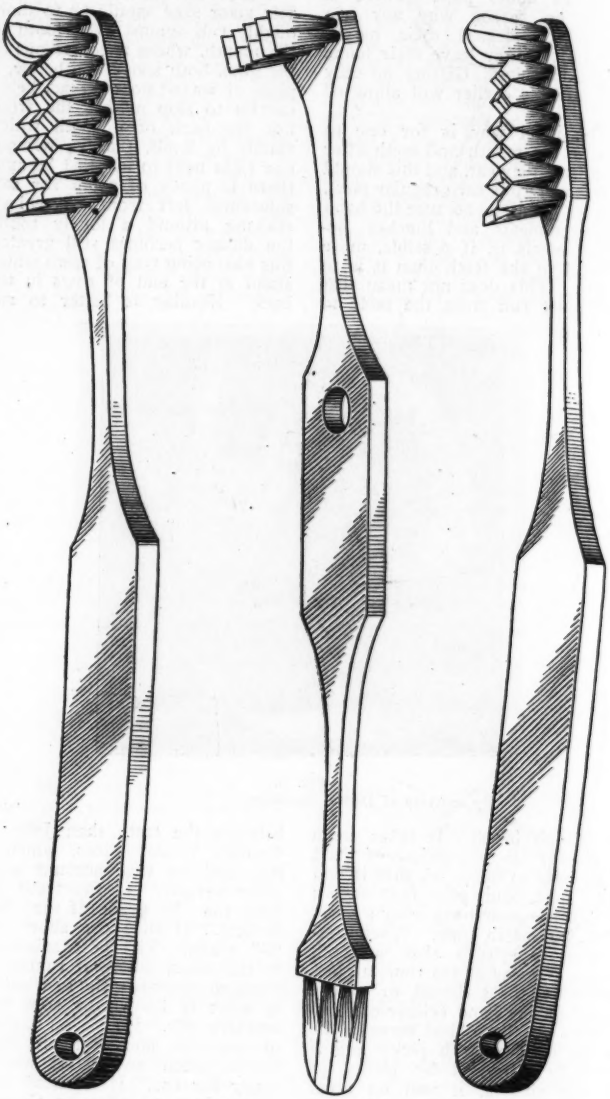
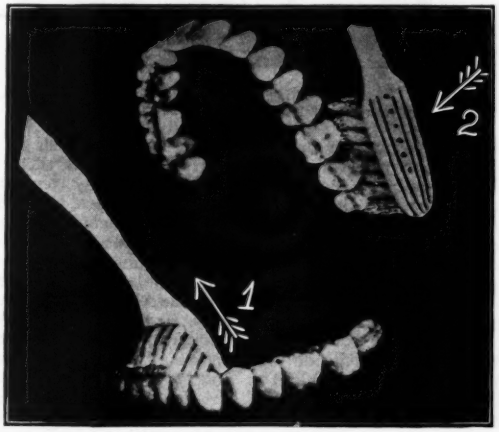


Fig. x.
By courtesy of Dental Summary.

bing, which must be done by moving the floss as the arrows show, starting back of the last teeth both above and below (a) entering the floss between all teeth, one after another coming towards the front, and at each space between the teeth, rubbing first against one tooth and then against the other as shown (b) and (c). Do not force the floss hard between the teeth against the gum, but make it slide gently from side to side until it finds its way. Don't rub the silk so as to cut into the gum, but rub hard against the tooth, just *at the gum*, only touching the latter without cutting into it.

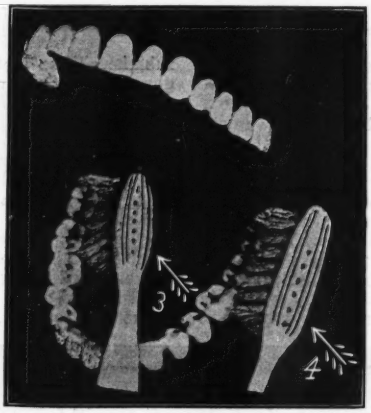
Wherever floss cannot enter between teeth, or wherever it cuts, or breaks between them, suspect something wrong. Either there are deposits, or there is decay, or some rough surface leading to it, or some bad filling or faulty artificial crown, any of which will cause the loss of teeth in time.



Figs. 1 and 2.
By courtesy of Dental Summary.

If ever a filling or a crown is pulled out by floss, just consider it a blessing. This could not happen unless the filling or crown was all undermined by decay, and it is better to know it when repair is still possible than when the damage has become too great for the tooth to be saved.

THE SPACE FOR THE MOTION OF A TOOTH BRUSH between the cheeks and the teeth, way back of the last teeth, and between the tongue and the lower teeth, back towards the throat, is limited. *A large tooth brush is useless* because it cannot be moved easily enough. A tooth brush, the bristle part of which measures more than one and a quarter inches may cover more teeth, but it cannot be moved so as to rub on them in the proper way, especially when we consider that the gums must be brushed quite as much as the teeth.

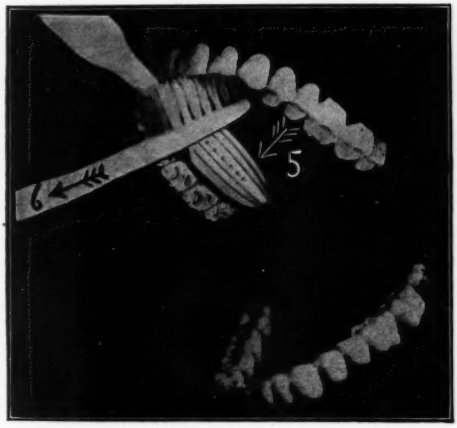


Figs. 3 and 4.
By courtesy of Dental Summary.

BRUSHING MUST START ON THE GUMS and come on to the teeth, sweeping in the direction of the length of the body, both above and below, outside and inside the teeth; see arrow, Fig. (0). To do this, and so that the bristles of the brush may go somewhat between the teeth as they leave the gums, it is necessary that there should be plenty of space between straight, crosswise rows of bristles. Those rows must shorten gradually as they near the long end tuft to properly adapt the uneven and curving teeth to be reached. The long end tuft will clean behind the rearmost teeth, and behind those next to empty spaces whence teeth have been lost. A brush should have a long slender neck between its bristles and its handle, so that this long slender neck may move with ease and comfort in the corners of the mouth, when the bristles are working far back on rear teeth. The handle of a brush should curve towards its bristles, never away from them, so that the bristles may tend to reach towards the back teeth instead of away from them. In some mouths, wherever it is difficult to pass the finger behind the farthest rear tooth, and back of it, between it and the cheek, it becomes necessary, so that the brush may have enough play to move freely there, to use a brush still narrower, having only three tufts in its rows of bristles instead of four, and with the bristles a little shorter. In such mouths it is just as well to use a smaller brush all over,

because it is not the quantity of bristles in a brush which does the cleansing, but it is the ability of those bristles to move easily and properly. Again, if the bristle part of a brush is too large, it fills the mouth so as to prevent reaching way back of the last teeth, *one of the most important places,* and as the teeth curve, instead of being in a straight row, there is a large part of the long brush which is not touching the teeth at all. When buying brushes, remember all the above, and also make sure that the brush ends with a tuft of bristles longer than the others, so that the end tuft can reach back of the farthest teeth, quite to the gum, both from the inside and outside of those teeth. *Brushes must allow starting the brushing on the gum to quicken the circulation of blood in them, brushing on to the teeth.* In time, teeth loosen from gums and sockets which become diseased if they are not properly fed by good blood, and that is why the *gums must be brushed, but never brush them crosswise;* never brush in the direction of the width and thickness of the body. This rubs the gums away from the teeth, irritates them, and besides, often wears grooves in the teeth themselves.

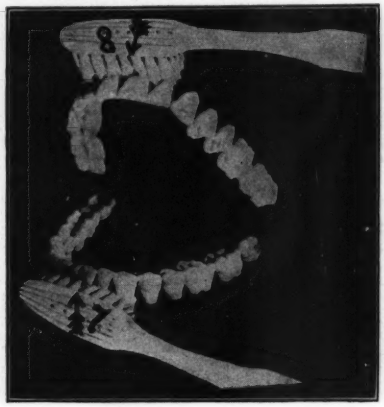
Teeth cannot be polished without *dry* rubbing, and polishing them is what must be done, to improve both their condition and their looks. All through the brushing, at least once a day, at bedtime, *dry* powder must be used from a *dry* glass on a *dry brush. Don't dip the brush in water either in the beginning, or while brushing,* but rinse it very thoroughly after the mouth is all cleansed. While brushing, every time that the brush becomes wet from saliva shake it or wipe it *dry,* and for every few teeth take plenty of *dry* powder on it from the glass (Fig. *x.*) Plenty of *dry* powder cannot be put on the brush either by picking it up from the palm of the hand, or by sprinkling it on the brush from a can or bottle, *and plenty of dry powder must be used.* Tooth pastes of all kinds are less satisfactory because they cannot give the dry polishing. Again, drugs in pastes are usually too strong, and it is a mild action that the gums require, so that it becomes far better to supply the drug treatment to the gums with



Figs. 5 and 6.
By courtesy of Dental Summary.

a suitable mouth wash diluted with water.

BRUSHING THE GUMS AS MUCH AS THE TEETH is a habit which must be acquired gradually, or else the gums may become sore at first. Little by little, gums harden and get tougher and tougher, until the more they are rubbed the better they feel, and in reality *the better they are.* Start this with a brush of medium hardness (*not a soft one*) and go slowly at first, with the proper kind of motion, as above explained. Gradually go harder and faster, and get to using brushes as *hard* as it is possible to



Figs. 7 and 8.
By courtesy of Dental Summary.

buy. You will find more and more comfort with them, *and do yourself more and more good.* The bristles of a brush which is used more than once a day soon become soft, even if they were hard at first. To repeat brushing as often as should be done, it is best to keep two or more brushes, and to mark them in such a way as to know when their daily turns come. Some brushes provide for this by being stamped with different numbers on their handles.

THE IDEAL TOOTH POWDER to use is not easy to prepare. It should be actually capable of giving a high polish to the teeth, *but without danger of scratching them in the least.* It must, in addition, have stringent, stimulant, actively cleansing, antiseptic and alkaline properties, just enough to be helpful to the gums without any danger of irritating them. This can be obtained by combining the following drugs in suitable proportions: Tannin, boracic acid, benzoic acid, sulphate of zinc, perborate of zinc, strontium peroxid, thymol, bicarbonate of soda, precipitated chalk, orris root and os depiae, *but this latter, cuttlefish bone, must have been brought to the very limit of fineness of which it is capable.* The whole must be pleasantly and agreeably flavored, and it should be kept in the mouth for a short while after use to get the greatest benefit from it.

As a rule, *it is not necessary to use powder oftener than once a day, and this should be at bedtime,* but it is an excellent and healthful habit to use it in the morning after breakfast in addition.

The ideal tooth powder just mentioned may not always be obtained conveniently and easily, and a simpler substitute for it, yet good and useful, of course not

possessing all the qualities of the above, but which any good druggist can put up, is:

Precipitated chalk.....2 ounces
Saccharin .....2 grains
Oil of peppermint.....1 drop
Oil of wintergreen.....3 drops
Perborate of soda.....1 drachm

Keep dry in a glass jar with a tight cover.

Use dry from the bottom of a glass on a dry brush.

Mouth Washes.—Although it is not a necessity in all mouths, a great many benefit largely by thorough rinsing and gargling with a mouth wash, following the powder. Here, again, the ideal mouth wash, one capable of carrying to the mouth all the properties which may be needed, with the different drugs in such proportions that they can only produce healthful stimulation with no danger of irritation, is no simple prescription. Mouth washes habitually fail to give the beneficial effects of iodide of zinc as an alterative and astringent. The chloride of zinc is useful in combination, but it lacks the alterative properties of the former. In addition, to supply the antiseptic, stimulant and actively cleansing qualities needed, formaldehyde, boracic acid, resorcin, thymol, benzoic acid, and eucalyptol are all needed, blended with a proportion of peroxid of hydrogen. The whole should be agreeably and pleasantly flavored.

Again, the above not always being easily obtained, we may sometimes need to turn to a simpler preparation, still capable of giving good results. All well posted druggists can easily and cheaply prepare a good mouth wash according to the New Alkaline Antiseptic Formula of the United States Pharmacopoeia. For that matter you can make an exceedingly useful mouth wash yourself,

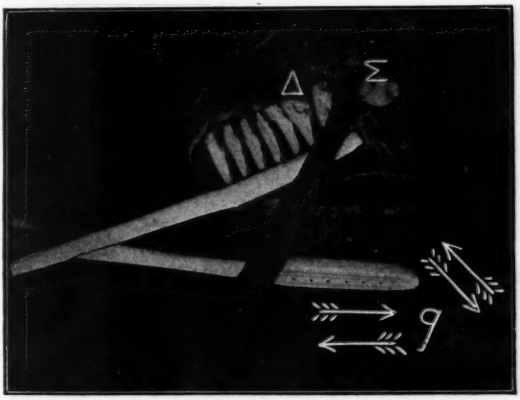


Fig. 9.
By courtesy of Dental Summary.

one with valuable properties in spite of its simplicity, and that is lime water. Place about a cup full of unslacked lime in a half gallon bottle; fill with water; cork well, and shake several times during the day. The following morning, pour off most of the water, which contains washings of the lime, and throw away. Fill again with water, and shake well. When it has settled, pour into small bottles to be kept until used. As long as lime remains, water may be added and the bottle well shaken. For use, dilute the lime water with about half as much or more plain water, and increase

the strength gradually as you feel able to. Keep the bottles well corked.

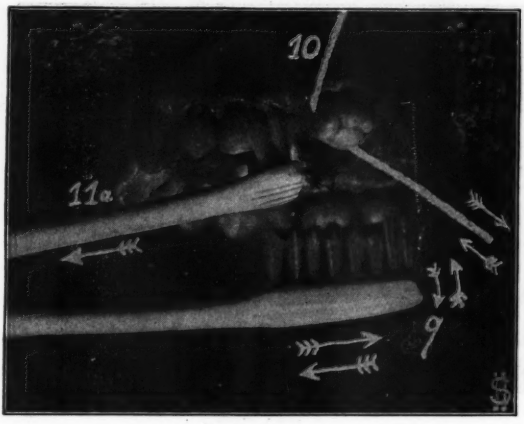
Nothing is better to use at bed time, just before going to sleep, than one of the suspensions of magnesium hydroxid in water. All druggists have this under various names, some are flavored and some are not, and some contain antiseptics . addition. The best known preparations of that kind are Phillips Milk of Magnesia, Wampole's Formalid Magnesia and Mulford's Aseptesia.

How to Use the Brush.—Now that we have given consideration to brushes and to preparations for the mouth, let us consider the details to observe in quickening the circulation of blood in the gums while properly brushing the teeth.

Dangerous deposits tend to form on the tongue side of lower front teeth and on the cheek side of upper back ones. They carry millions of germs, and injure the gums besides by spreading into them, causing them to shrink away and become diseased until the teeth loosen in time. Work the brush as shown by the arrows at (1), starting way down on the gum, brushing upward. Then brush as the arrow shows at (2), being careful to start high up on the gum and come down, making the long end tuft of the brush reach entirely back of the farthest tooth.

Soft deposits, but full of dangerous germs, very often form on the tongue side of lower back teeth and behind the farthest one. Make sure to work your brush as shown by the arrow at (3), from way down on the gums up, and with the long end tuft back of the last teeth.

Of course, everything said *about one side of the mouth also applies to the other,* and it is necessary to have wiped the brush *dry* and to have recharged it with *dry* powder from the glass for each one of the places so far mentioned, *and for each side of the mouth.* Thus taking up more *dry* powder on a *wiped* brush also appljes to what follows.



Figs. 10 and 11a.

The next step is to brush as shown by the arrow at (4), on the cheek side of lower back teeth, from way down on the gums, upward, and behind the last rear teeth.

Follow the order and the direction of arrows shown at (5), (6), (7) and (8). Keep these pictures before you as you brush your

teeth for the first few times, until you know by heart both the order in which to do the different places and the way to move the brush according to the arrows. Start from the gums and brush towards the teeth for all the numbers. You may lose time at first, trying to do things right, but you will soon get into a habit which is priceless.

The brush is not shown anywhere on the side teeth because it will find its way there without specially trying to, by following the directions above, and they will get their share of the brushing, including their gums.

The chewing surfaces of the large back teeth must now get attention (Fig. 9). Those farthest back need brushing the most, both above and below.

Better brushing can be done by using both hands, of course one at a time, than with only one. The left hand can better reach the cheek sides of gums and teeth on the left hand side of the mouth and the tongue sides of those on the right of the body, both above and below. If the right hand only be used, the arm must be well stretched out and the wrist curved back to properly reach the tongue sides of right hand side teeth and the cheek sides of those on the left side, way back of them.

Give special care, with more powder, to all teeth which stand alone, next to places whence teeth have been lost. The long end tuft of the brush can reach behind such teeth (A) (Fig. 9); but in front of them it will require an ordinary mucilage brush to do good work (E). We are all the time throwing away new mucilage brushes rather than to take the trouble to fix them in a fresh bottle. Save them for your teeth.

Of course, where one can get a brush made with two ends like the one shown, it will do still better work in such empty places,

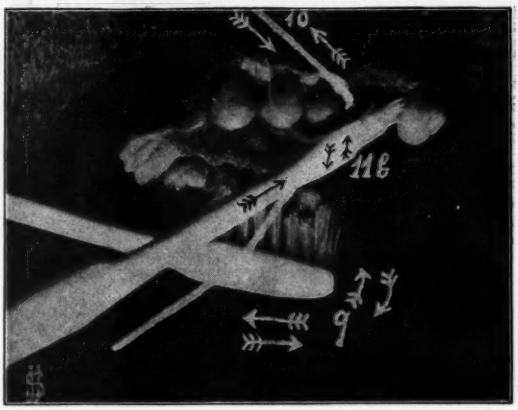


Fig. 11b.

and be more convenient to use. Move the different ends of such a brush in empty places, above, below, both sides, according to the arrows shown at (11a) and (11b); but before brushing in those places, first rub floss there against both teeth in the direction shown by the arrows at (10). Those places require special care because the open space there invites creamy food remnants to stick, become full of germs and decompose.

Both ends of such brushes will also clean some places on plates (out of the mouth, with powder) and children's teeth with bandages

on to straighten them, better than full brushes.

When brushing on the chewing surfaces of back teeth, carefully follow the directions of the arrows shown at (9). The reason is that deep grooves in these teeth run in different directions, and that they will not be swept out clean unless the bristles move like all the grooves run.

It is difficult to keep the teeth free of deposits which damage the gums down on the tongue side of *long* lower front teeth, or of short ones which incline towards the tongue (12a) and (12b). The hoe end of the brush just shown will work easily in those places, moving it according to the arrows. It is possible, with plenty of care, to do well without a special brush of this kind, but the fact is that the hoe end of that brush is so useful, being capable of easily reaching places like (11a), and behind the farthest back teeth in the mouth even better than the long end tuft on a full brush, that it is well worth while your making one for yourself, if you cannot find one. If so, get a hard brush with space between straight crosswise rows of bristles, and with all the bristles of the same length. With a sharp knife cut all the bristles off the brush except the two rows at the very end, and you have it; not as convenient, but quite effective.

CLEANING BRIDGES.—Some people wear bridges. They require special care. The most dangerous kind of deposits are always sticking under bridges, especially about the crowns which carry them. *A bridge should always be made so that it can be cleansed underneath.* What follows applies to all bridges, both in the upper and lower jaws. You may have a little difficulty finding out how to get the floss under your bridge, but *it must be done*, and when it is, rub the floss well against the crowns at both ends of the bridge (13), giving it the motion shown by the arrows. Afterwards brush under the bridge (14) moving the hoe end of the double end brush, (or of the one cut to imitate it), always as shown by the arrows, being careful to brush well underneath the bridge against the crowns at both ends. If it be a rear bridge, thread the floss as just explained, rub it against the crowns at both extremities of the bridge (15); then, with the hoe brush end and more powder, clean

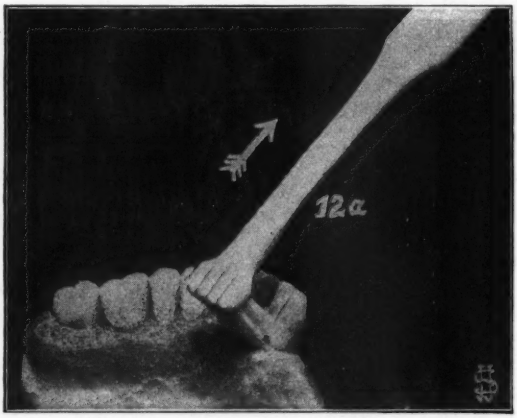


Fig. 12a.

behind the crowns at the front end of the bridge, underneath it (16), and likewise clean the rear supporting crown at the gum, underneath the bridge, with the paint brush end (17), giving the motion shown by arrows with floss and with the brush. In the absence of a special brush like the one shown, use a mucilage brush and a large brush cut as just explained. It is possible to replace the hoe end of the double end brush by the long tuft at the extremity of the full brush, but this is difficult, and the work less sure. But the long end tuft of the full brush cannot do the work shown at (17) properly, and a mucilage brush is needed there, if you have not the double end brush shown.

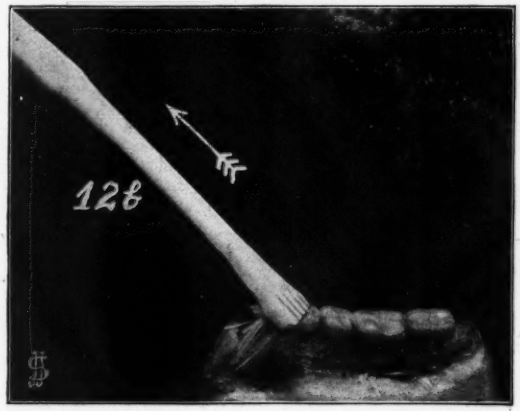
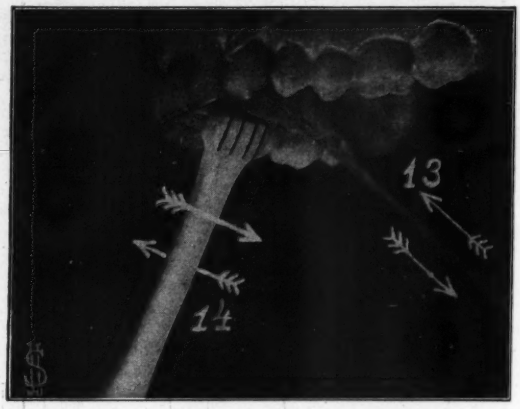


Fig. 12b.

CLEANING THE TONGUE.—There are very many people whose tongues are covered with deposits at the back. Those deposits hold millions of dangerous germs, and should be removed. Lacking a tongue scraper (18), the part at (a) of which is made into a blunt edge which cannot wound, you can make one yourself by taking a whalebone or celluloid stiffener, such as is used in ladies girdles, belts and collars, a piece about 10 inches long, curving the middle of it like the tongue scraper shown, and tieing the end parts so as to form a handle like that in the picture. Scraping the deposits off the tongue should be done in the morning especially, on rising, when they will be found the thickest, but it is a wise plan, when deposits are at all strong, to also remove them at bed time. When doing so, stick the tongue out just as far as you can, and reach way back of it in the throat. It will gag you at first, and for a few days, but only until you become accustomed to it, and the good you will get from the habit will more than justify the annoyance at first, because you will stop swallowing millions of unhealthful germs. It is best to use the tongue scraper before the floss and the brush.

Teeth maintained absolutely clean at all times, from childhood to the grave (except while eating), *could not decay,* except some less harmful cavities which might form in grooves on the biting part of teeth; but *decay between the teeth,* the kind which does the most damage, *would all be prevented.* The nearer we come to constant, perfect cleanliness, the more we lessen decay and favor health.

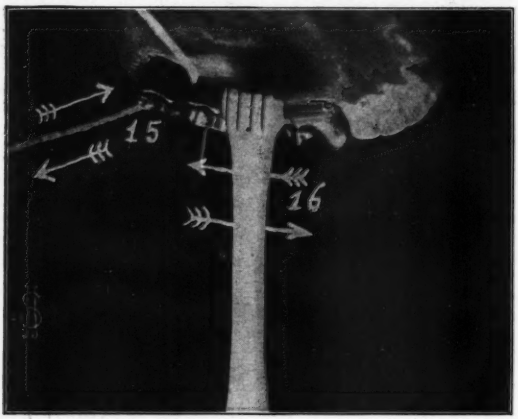
BLEEDING OR SORENESS OF THE GUMS shows that they are diseased, and will in time get in such



Figs. 13 and 14.

a condition that the roots of the teeth will loosen in their sockets. The dentist's treatment is needed. Afterwards, little by little, brush harder and harder, increasing the stiffness of your brushes at each new one you buy. Conditions such as just mentioned *would have been prevented if the brushing had always been done so as to quicken the flow of blood in the gums.*

If everyone had plenty of active exercise in the open air from childhood, always went to sleep and rose early, always chewed strongly on hard, coarse food which rubs both the teeth and the gums, in other words, if nature's plan was always and better followed, all these directions for the care of the teeth would be needed somewhat less. On the other hand, the soft, pasty character of most of our present day food makes it stick to the teeth, with-



Figs. 15 and 16.

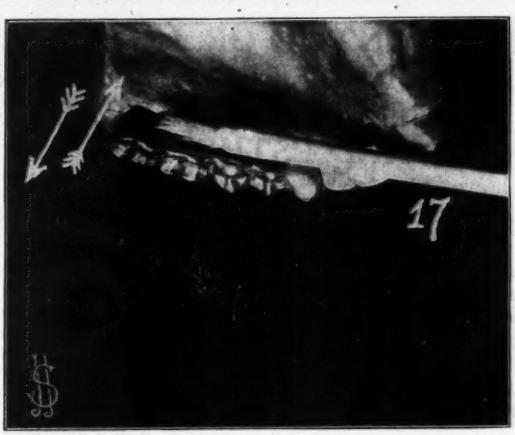


Fig. 17.

out having given the gums any rubbing, increasing the necessity for thorough and careful, intelligent brushing of both gums and teeth.

THE POSITION, THE WORK AND THE LOOKS OF OUR SECOND TEETH, which begin coming at the age of five, greatly depend on a child's teeth being kept in good condition. Mothers should often and carefully notice from the age of five on, whether any new large teeth are coming out behind those already in the child's mouth, farther back, both above and below. Those teeth belong to the second set. They are the most important we have in the head, and they should be kept through life.

Between the ages of 6 and 12 months, as often as possible, and especially at bed time, rub the baby's teeth with cotton wrapped on a small thin stick charged with a magnesia preparation of the kind above mentioned. From one to two years, use in a child's mouth a double end brush like shown above, making sure to reach all parts of all teeth, charging the brush often with a magnesia solution, always at bed time, and often after meals. Lacking one of these brushes make up for the two ends by using a mucilage brush for one, and cutting a brush as above explained for the other, or use an exceedingly small brush. When a child is two years old the mouth should be cared for and cleansed just as above explained, and this should then be continued on through life.

When one is sick, or only ailing, the danger from germs in the mouth is still stronger than in good health, so that the necessity for cleansing the mouth thoroughly and oftener becomes greater.

Fig. 18.

ORTHODONTIA, OR IRREGULAR TEETH AND THEIR INFLUENCE ON MASTICATION, BREATHING AND ESTHETICS

By CHARLES R. JACKSON, Phar. G., D. D. S., Indianapolis, Ind.

The term "orthodontia" is derived from two Greek words meaning "straight" and "tooth." Correcting deformities of the mouth or straightening crooked teeth is known as the science of orthodontia and the specialist who treats these cases is an orthodontist.

Before considering the treatment it might be well to cite the approximate ages at which the baby or deciduous teeth are replaced.

The full set of baby teeth consists of ten teeth in each jaw, four incisors, two cuspids or eye teeth and four molars (two on each side).

The incisors are replaced at 5 to 8 years of age, the molars at 9 to 12 years and the cuspids at 10 to 14 years.

The permanent set in addition to having each of the baby teeth replaced has three molars erupt entirely back of these on each side of each jaw, making 16 teeth in each jaw.

The first of these extra molars erupt at about six years of age and are very often mistaken for temporary teeth and consequently neglected.

These teeth are perhaps the most important in the mouth and should be carefully watched.

The second molars erupt about the twelfth year and the third molars, or "wisdom" teeth, later in life.

When children are brought to the orthodontist by parents practically the same questions are asked by all.

1st.—SHOULD I HAVE MY CHILD'S TEETH STRAIGHTENED? In most cases, YES, for several reasons.

(a) APPEARANCE.—There is nothing which detracts more from a person's looks than unsightly, irregular teeth, and the mortification suffered by a sensitive girl with a mouth deformity can not be over-estimated.

A child with a deformed mouth enters the race of life with a big handicap and its treatment may mean a question of success or failure; happiness or unhappiness.

(b) SERVICE.—The primary purpose of our teeth is for service, to grind the food fine enough for it to be readily digested by the stomach. The jaws and teeth, when normal, present a wonderfully perfect machine for crushing and grinding our food, but when the jaws are imperfectly developed or teeth are lost or misplaced, its effectiveness is ruined just as any other machine is ruined by removing some of its parts.

(c) FREEDOM FROM DECAY.—Occasionally a person is heard to say "I never had any dental work done." Usually such people have perfectly regular teeth, for certain it is that the more irregular the teeth the more difficult they are to keep clean, the more points there are for lodgment of food and debris and, consequently, more decay. Conversely, a normal mouth with regular teeth presents comparatively few points for lodgment of food debris with consequently little decay.

2d.—AT WHAT AGE SHOULD THEY BE STRAIGHTENED? Modern orthodontic treatment does not mean arbitrarily moving teeth from one position to another but by gentle

pressure upon the parts so stimulating them as to induce normal development. In other words assisting and encouraging nature to accomplish that which she is trying to do. Most irregularities are due to imperfect development, so that the proper time to correct them is during the developing period of the child's mouth. The old idea that we should wait until all the second teeth had erupted before beginning treatment is now recognized as wrong and treatment is begun as soon as we are sure the irregularity will persist. Other things being equal, the earlier treatment is begun the better the results.

(3) IS IT VERY PAINFUL?—When properly done, the pain is so slight that even the youngest children do not complain after they become accustomed to appliances. Although it is difficult to convince patients who were treated years ago that this is true, we may say today that it is practically painless. Remember we are simply assisting nature and not fighting her efforts.

(4) DOES THE TREATMENT IMPAIR THE HEALTH?—Rare indeed are the cases in which we can detect any decrease in the bodily vigor of the patient during treatment and in many cases, especially those associated with mouth breathing, a steady improvement is noticed from the beginning of treatment.

(5) HOW LONG DOES IT TAKE?—The period of treatment may require from one week to one year, or even longer, depending entirely upon the degree of deformity, the age, etc. The period of retention usually varies inversely as the age. The younger the patient the shorter the necessary period of retention. By "treatment" we mean, correcting the irregularity of the teeth, and by "retention," holding them until they have no tendency to return to their original positions.

(6) WILL NATURE CORRECT THE IRREGULARITY IF LEFT ALONE?—A few simple cases are self-corrective and it would be folly to interfere. These cases are easily recognized. After the teeth have become seriously misplaced, however, there is no more possibility of nature correcting the case unaided than there is of a broken arm being set and straightened without the aid of a surgeon. The force of occlusion, that is, the force of the upper and lower teeth striking together, prevents correction without assistance.

7th. WHAT ARE THE CAUSES OF CROOKED TEETH?—In a healthy, normally developing child it would seem just as natural and normal to have fully developed jaws and straight teeth as to have fully developed and straight toes and fingers, and nature is trying constantly to bring about this result.

Usually the orthodontist does not see the patient until the deformity becomes quite advanced, which emphasizes the necessity of the child visiting the dentist as often and as regularly as the parent.

(a) HEREDITY, in many cases, plays an important part. There is a tendency for the child to inherit peculiarities of the teeth of the parent the same as any other peculiarity, and inherited tendencies are not easily combated. Most deformities of the mouth, however, are due to acquired causes and if these causes could be recognized and removed early enough most irregularities could be prevented.

(b) HABITS.—There are many habits of chilrhood, such as thumb-sucking, etc., which are seemingly harmless in themselves but, when persisted in, may produce serious deformities. The bony structures of the growing child are so soft and pliable that a very slight pressure constantly applied may mould a bone into almost any form.

The tribe of Flathead Indians produce flat heads by binding a board tightly upon the heads of their children.

It seems to be only when these habits persist after the nursing age that trouble results. Many mouth deformities are directly traceable to sucking the thumb;

others to sucking the finger, and some to the persistent and continued use of rubber nipples and pacifiers.

Biting of the lower lip is perhaps the most common habit later in childhood. This nervous manifestation often persists even in adult life.

Disuse of the teeth, or insufficient mastication, may be classed as a habit. We have too little demand for chewing in the child's food. The idea that chewing crusts of bread and other hard and tough foods will injure the teeth and gums is wrong. It is just what they need. The teeth and muscles need the exercise and the gums need the massaging. Use of the jaws and teeth is just as necessary to their development and health as is the exercise of any other part of the body. The enamel of the teeth is so hard that there need be no fear of its being injured from chewing any food.

The child who can not chew crusts needs dental attention.

(c) EXTRACTION AND NEGLECT OF THE TEETH.—The teeth are not set rigidly in solid bone but are supported by a honey-combed, bony process which is easily broken down and bent. When a tooth is extracted this weak process is not strong enough to support the adjoining teeth and they shift and tip into the space thus made.

This is true of the temporary teeth as well as the permanent and their preservation is, if possible, still more important. The common opinion of parents has been that as the deciduous teeth were to be lost so soon it was not worth while to have them filled, treated, etc. But let us consider for a moment the deciduous molars, which are the teeth used in chewing, are not replaced until the child is ten to twelve years of age. If for no other reason, is it fair to the child, during these years, when he is growing so fast and needs all the nourishment he can get, to deprive him of the means to properly prepare his food for the stomach.

It is not too much to say, in the light of our present knowledge, that the difference between a strong, robust child and a weak, anaemic one is the difference between good, sound teeth and decayed, neglected ones.

Fletcherism has taught us that it is not so much the quantity of food as it is the condition of the food taken into the stomach which makes for health or ill health.

Many children acquire the habit of bolting their food without chewing because of the sensitive condition of their neglected teeth; a habit which reacts against their health and often is continued for years after the cause has been removed.

It is a deplorable fact that conditions exist in the mouths of many children for years which the parents would not tolerate for twenty-four hours.

Each of the deciduous teeth is succeeded by a permanent tooth and these deciduous teeth should be preserved until the succeeding tooth is ready to erupt, *no matter how long that is.* There are three permanent molars on each side of each jaw which erupt back of all the deciduous teeth, but if the deciduous molars are extracted too early, these permanent molars, the first of which comes at six years of age, move forward into the space thus made, taking the place which should be occupied by other teeth. In this case we do not have the proper development of the jaws and when the other teeth come in there is no space for them and they are crowded inside or outside of the proper line.

Those teeth which erupt about the eleventh to fourteenth year high up on the gum, outside of all the other teeth and usually spoken of as "Tushes" are not abnormal teeth *and should never be extracted.* They are perfectly good, sound, cuspid or eye teeth which are, next to the first permanent molar, the most important teeth in the mouth. They grow

FIGS. 1 and 2.—A Typical Face of a Child with Adenoids.

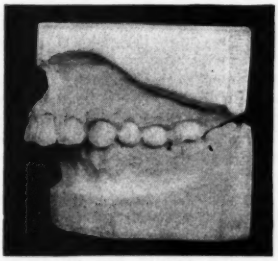


FIG. 3.—Above Before Treatment Showing Prominent Front Teeth.

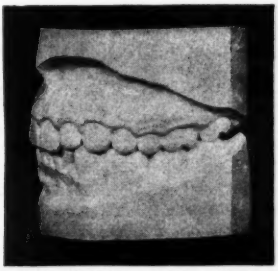


FIG. 4.—Same, After Treatment. Note Front Teeth.

FIG 5.—Upper Jaw, Fig. 3. Note Narrow Arch.

FIG. 6.—Upper Jaw, Fig. 4. Note Widened Arch.

in this position because there is no space left for them where they belong, due most generally to the early loss of the temporary cuspids. The space is closed up by the other teeth and when these teeth, which are the last of the temporary set to be replaced, get ready to erupt there is no place for them.

When the temporary teeth are given proper care it is seldom necessary to have the dentist extract any of them. The roots are resorbed at the proper age as the permanent tooth advances, and the crown may be removed with the fingers. The old rule is still good —"Extract a tooth only when it interferes with its successor."

(d) NASAL OBSTRUCTIONS OR MOUTH BREATHING.—There are certain deformities of the teeth and mouth always associated with nasal obstruction and consequent mouth breathing.

Well developed dental arches are almost invariably accompanied by well developed nasal spaces and normal sized bones and sinuses of the face.

On the contrary, a poorly developed, narrowed dental arch is always accompanied by an undeveloped condition of the bones and sinuses of the face, with constricted or entirely closed nasal passages.

This is not a mere coincidence, but is a pathological result.

Closed nasal passages means mouth breathing and mouth breathing means not only an unsightly deformity of the mouth and face but a general lowered vitality and seriously impaired health of the child.

Oxygen is necessary to the maintenance of animal life and is provided in the air we breathe. The better the air or the richer it is in oxygen and the more of it we inhale, other things being equal, the better are the bodily functions carried on and, consequently the better the health.

Little is accomplished then, however much fresh air we may furnish the child outside the body, if the nasal passages or means of getting this air within the body are neglected.

Normally one should breathe through the nose. Air entering the narrow external opening of the nose, passes into a rather large nasal chamber. Into this chamber project three small scroll-shaped bones called "turbines" which act like radiators, so to speak, warming and moistening the air as it passes over them and holding the finer particles of dust, which are often germ-laden, with which the air is filled. The coarser particles of dust are removed by the hairs in the nasal openings.

In the case of the mouth breather this warming, moistening, cleaning process does not take place and the delicate lining membrane of the mouth, throat and lungs is subjected to the irritation of this dry, germ and dust-laden air. This membrane is always in these cases in an irritated, inflamed condition and furnishes good soil for various infections.

From the nasal chamber air passed through the posterior nares and downward into the pharnyx, or upper part of the throat, through the larynx where are the organs of voice, then into the trachea or windpipe, where the passage divides into two branches, or bronchi, leading to the lungs.

The most frequent obstruction of the air passages in children is commonly known as "adenoids." Adenoids should not be considered entirely as a foreign growth, as they are hypertrophys or enlargement of an organ known as the "pharyngeal tonsil," which should, under normal conditions, atrophy or decrease in size after infancy but frequently becomes very extensive. This adenoid vegetation occurs in the upper part of the pharynx, between the nose and the throat and in many cases completely closes the passage. Sometimes this adenoid tissue covers the openings into the Eustachian tubes leading to the ears and produces partial deafness. With the nasal passages more or less completely closed the child is forced to breathe through the mouth.

FIGS. 7 and 8.—Mouth Breather, Before and After Treatment.

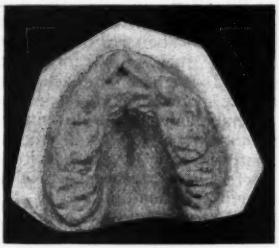


FIG. 9.—An Unusually Narrow Arch of a Mouth Breather. Before Treatment.

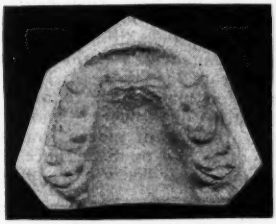


FIG. 10.—The Same Arch After Treatment. Width of Arch Increased Over One-Half Inch.

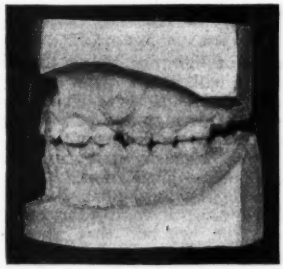


Fig. 11. A So-called "Tusk." Simply a Cuspid Unable to Come Down in Place Because of Lack of Space.

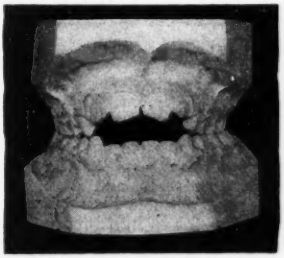


FIG. 12.—The Typical Case of Thumb-Sucking.

Most mouth breathers become such from necessity and it is useless in these cases, to continually admonish them to close their mouths.

Other obstructions which are not uncommon are nasal polypi; enlargement of the turbinate bones of the nose; and enlargement of the tonsils.

Some of the symptoms of nasal obstruction are mouth breathing, especially at night, with noisy respiration; restlessness during sleep; dryness of the mouth; a vacant expression of countenance; frequent colds; a narrow, undeveloped mouth with very prominent or crowded teeth.

The child presents a poorly developed, ill-nourished, anaemic condition. He is usually irritable, backward in his studies and is often, though erroneously, thought to be deficient mentally.

We all know how difficult it is to chew our food when suffering from a bad cold in the head. Imagine this condition in the child continuing over a period of several years, as it does. There is imperfect mastication, followed by digestive disturbances; more or less dropping of mucus from the throat to add to disturbance, and insufficient air because of difficulty in breathing. All this results in defective nutrition. *Is it any wonder that we have poorly developed, backward children?*

That mouth breathing is responsible for this conditon has been proven in hundreds of cases by the rapid improvement following treatment.

Treatment must include not only removing the nasal obstruction but also correcting the deformity of the mouth in order to produce the stimulation necessary to the proper development of the bones and cells of the face and to make it possible for the patient to normally close the lips. *It is practically impossible to breathe through the nose without closing the lips.*

The human body is an engine producing tissue, heat and energy. The food is the fuel of this engine and the air inhaled into the lungs is the draught necessary to burn that fuel. When we have a poor grade of fuel (food improperly prepared for the stomach) and have a poor draught (deficient oxygen inhaled) we do not get and should not expect an efficient, smooth-working machine. Without a perfect working human machine we induce ill health.

HOW TO EAT

By HORACE FLETCHER, A. M., New York, N. Y.—Author of "The A, B, Z of Our Own Nutrition," etc.

Doesn't everyone know HOW TO EAT?

No!

WHY?

BECAUSE!

In the first place man was made to fit certain sorts of food. He was given teeth and a digestive apparatus suitable for turning certain raw foods into muscle, bone, or heat, as these were needed or used up. Under those pre-adamite conditions there was no cooking. Fire even had not been discovered, except in the form of, and as the result of, lightning. How to make fire, at will, man did not know.

Before foods were cooked everybody was *compelled* to chew his food, for it was not found in a liquid or mushy state; and there was not too much of it.

In digging up human skeletons, which must have lived ages and ages ago, we find that men and women lived to great age and often died with full sets of teeth in their heads. These teeth were well-worn, but not decayed, and this preservation of the teeth told

a story of good health which could not be told better by words.

Thus we know that when there were no liquid or mushy foods, and when everybody was compelled to chew his food well in order to get the good there was in it, out of it, he was more healthy, and lived longer and kept his teeth better than he does now.

WHEN DID MAN FORGET HOW TO EAT?

When cooking was discovered, and pie-making, and soup, and spices were invented. It then became easy to swallow, or, "bolt," the food without properly mixing it with saliva; which is the first great necessity of good digestion.

That is how everybody forgot how to eat right. Old folks were in a hurry to get back to work, and little folks were in a hurry to get out to play; and hence all of them got in the habit of eating too fast. So fast, that saliva had no chance to mix with the food; and half of it was not digested at all.

We know now that food which is not digested, and thus made into blood or heat, is liable to rot in the stomach, or, somewhere in the intestines. When the food rots in the body it poisons the body and that is what makes a person sick or tired. No well person should be tired in any other way than being sleepy. Other kinds of the "tired feeling" besides sleepiness means sickness.

Since we *cannot always conveniently eat nothing but raw food*, and since cooked food tastes so good to us HOW CAN WE AVOID EATING IN THE WRONG WAY? That is the important question.

I will tell you.

Just treat the cooked foods; the soups, and mushes, and the like; just as our forefathers were COMPELLED to treat their raw food; so as not to be sick or tired.

Chew everything that is solid for all it is worth, and get ALL the TASTE out of it before swallowing.

Sip and taste soup, and milk, and chew mushes for all the taste there is in them, and thus give the juices of the mouth (saliva), a chance to mix with them. That is the right way to eat, and if you eat that way you will not only know HOW TO EAT, but you will enjoy your food as you never have enjoyed it before. And it will not take much longer to eat!

At first it will take a little longer to eat a meal, and fully satisfy appetite, than before, but in a little while the juices of the mouth will become stronger, and the taste will be keener, and appetite will be satisfied with much less food.

While you have eaten less food you have tasted it more, and have *enjoyed* it *much* more.

Eating right is twice as profitable, in two or three years, as eating wrong.

Knowing HOW TO EAT, and taking advantage of that knowledge induces a person to be careful, and always eat right. It is the best life-insurance in the world. It doesn't cost anything, in the form of premiums, to begin with, and hence there are no extra expenses to pay. It results in eating LESS food, but in EATING IT MORE. Eating less food means less cost, and eating it *more* means *more enjoyment.*

BESIDES, eating right makes meats, and other expensive foods, less pleasing; and bread, and potatoes, and vegetables, and fruits, *taste so good* that the appetite demands them in preference to meat.

When a family begins Fletcherizing faithfully; that is, when all the members eat carefully, as above advised, the inclinations lead to the simpler and cheaper foods, and so much more satisfaction is gotten out of a less amount of food, that it is a safe betting proposition that the cost of the food for the family will be cut down by one-half or one-third, at least. This is the *best* way to *"get the best"* of the terrible "High Cost of Living."

When you hear anyone say that they "haven't got time" to eat slowly, you can assure them of the following fact: that in eating,

more than in anything else, *"haste makes waste."* If you have only two minutes in which to eat, it is of utmost importance that you should eat so as to get *all* of the *taste* out of each mouthful of the food. In two minutes, you can eat two good mouthfuls in a way to get *all* of the good there is in them, out of them. If you have ten minutes you can get enough goodness out of ten mouthfuls to serve as a good "square meal."

If you shovel in the food, or, gulp it down, if it is liquid, two-thirds of it will have to rot in the stomach, or somewhere in the intestines. The rotted food takes different forms. Some of it becomes putrid, and if there is a bad smell when the waste of that "gorge" is expelled from the body, it is a certain sign that you have *not* eaten right.

If your perspiration smells bad it is another sign that you have *not* eaten right.

When a person eats right there is very little waste to expel from the body, and it, as well as the perspiration, are not offensive in odor. This is the "Z" of the subject, as described in the author's book, entitled "The A, B, Z of Our Own Nutrition."

Right eating is the A and B of the Alphabet of Alimentation and HOW the matter turns out in the end is the "Z."

There are two other things that are necessary to KNOWING HOW TO EAT. Never eat until "good and hungry." Being "good and hungray" is not felt in the body; only in the head. Be sure about the location of the "hungry feeling." If your "mouth waters" at the thought or smell of any given food, you are "good and hungry" for it. If you have a faint, or, uncomfortable feeling in the stomach, it is *not* hunger, but dyspeptic craving. It is the same kind of an "all-gone" feeling that a drunkard has when he cannot get a fresh drink of "booze." Don't mind that bad feeling in the stomach, but wait for the keen desire for food in the head, accompanied by the "watering of the mouth."

The next necessity of right eating is to *not* eat when you are worried or angry. What you eat under those depressing conditions will not digest well, and will hurt you instead of help you. Waiting for a keen appetite, and calm mental condition, will bring both of these requisites of good digestion quickly. The growing, real hunger, will make you *forget your other troubles.*

To SUM UP:

Eating right is a very simple matter and consists of:

First—Don't eat until "good and hungry."

Second—Don't eat when angry, worried, or, when you cannot enjoy your food.

Third—Chew all solid food until *it swallows itself.*

Fourth—Get ALL taste out of liquid or mushy food by sucking or sipping.

Fifth—Stop eating when the appetite begins to say "enough."

Sixth—You will lose weight at first, even if you are thin to start with, but in a little time you will find YOUR normal weight and stop.

Seventh—Don't think about the number of chews or sips but only of the enjoyment of the taste.

Eighth—Don't imagine that meat is necessary to strength. No meat meals give better strength and endurance results.

Ninth—Remember that a week, or two weeks, of careful attention to LEARNING HOW TO EAT, as above, will put you in the habit of it so that you will not have to trouble yourself about it after a while.

Tenth—Remember that DIETETIC RIGHTEOUSNESS means less money cost and more solid enjoyment of the food; and, also that it makes it easy to be righteous in other ways.

These are ten good commandments of right eating, and unless you respect them, and observe them, you are a dietetic sinner, and do not know what is good for you.

FEAR AND THE CHILD

By CHARLES G. STILES, Ph. B., D. D. S., New West Brighton, Staten Island, N. Y.

Early in May of this year there was completed in Cleveland a remarkable test showing the mental, moral, and physical improvement to be gained by children through keeping the teeth and gums in a healthy condition. A complete report of this test has already been given in ORAL HYGIENE, therefore suffice it to say at this time that those dentists who conducted the test proved without a doubt that many of our delinquent and unreliable children can be cured of their abnormal tendencies by proper care of the mouth. But in order to bring about a willingness on the part of the average child to undergo the operations necessary to put the mouth in a healthy condition there must be brought into the problem an element over which the dentist has no direct control. By this I mean the elimination of fear of the dentist and of his instruments. My own experience has been that if a child is brought to me in the same way that that same child would be taken into a store to get a pair of shoes, I will have no trouble cleaning out a cavity or doing any of the other operations necessary to keep the first teeth in a comfortable condition.

To illustrate my meaning I will state the case of a girl eight or nine years of age. Never before had she been in a dentist's office and stranger still never had she heard any one speak of the horrible torture always inflicted in the operating chair. Consequently I was able to clean out a large cavity in a lower molar, expose the pulp, and apply a dressing to kill it. I do not mean that the operating caused no pain but that there was no recognition of the sensation produced as pain. When I began work I told her that it would tickle as I worked down in and impressing that fact strongly upon her mind I was able to work through two or three appointments without the slightest evidence of fear on the part of the child. But finally came one fatal day on which the poor child came in fear and trembling. I sat down and talked with her for a while and found out that her mother and numerous kind (?) friends had been telling her that it was hurt and not tickle which she felt. Behold the structure of fearlessness which I had so carefully reared dashed to the ground and in its place set up a picture of the Demon Pain lurking ever about the dentist's chair. I could cite a number of such cases but one is sufficient to make my point clear.

To the mothers, fathers, older brothers and sisters, grand-parents and all others who have children about them, let me sound this warning: "As you value sound teeth, good health, beauty, and ability to keep up to the school standard, never under any consideration and no matter what your own experience may have been, never, I say, speak in the presence of any child, no matter how young it may be, of the pain of having one's dental work done. Do not say, 'Come along dearie, it won't hurt,' for by simply using the word hurt you have suggested pain and done the very thing which should not have been done. Should the little one ask if it will hurt it is far better to evade the question by interesting the child in some other matter and so drive the question out of the little head.

Think it over those of you who read this and are associated with children. Which is the more sensible and Christian-like course to

take—to instill fear in the young mind or to exercise a little control over one's remarks while in the presence of children and thus be able to send the little ones to the dentist bearing no heavy burden of dread but rather in a curious and interested frame of mind, and thus save the coming generation at least seventy per cent of the pain and discomfort that we have had?

A TALK WITH THE CHILDREN

By GEORGE EDWIN HUNT, M. D., D. D. S., Indianapolis, Indiana

The talk here given is a slight condensation of one used many times by the writer in addresses to children of from seven to ten years of age, whose attention you may not hope to hold over twenty minutes. If illustrated with the lantern it is much more effective. No originality is claimed for it. It may be elaborated at discretion.

I am going to begin my talk with you by asking a question. I would rather ask questions than answer them because it is easier to ask them, sometimes, than it is to answer them. Here is the question: How many of you washed your faces before you came to school this morning? (Pause.) Well, that *is* good. All of you washed your faces. Now, I am going to ask you another question and I want you to tell the honest, cross-your-heart truth about it: How many of you cleaned your teeth before coming to school this morning? (Pause.) Well, that is fairly good but quite a number of you did not do so. Now, *I* think, if you are going to omit one of those cleanings you had better clean your teeth and let your faces go dirty. But I would not omit either of them if I were you for if you do not wash your faces they will look badly and if you do not wash your teeth it will be bad for you in a number of ways.

Now for another question. How many of you ever had the toothache? (Pause.) Oh my! Nearly every one of you have had the toothache. Well, if you have had the toothache it is not necessary for me to tell you it is not nice. It hurts. But maybe I can help you some by telling you what makes the teeth ache and how you can keep from having it. Nobody likes the toothache, do they? Is there any one here that would like to have the toothache? (Pause.) No, not one.

Well, you know teeth do not ache unless they decay and first I want to tell you what makes them decay. But before I do so I want to ask you another question. Let us suppose the evening meal is over. Every one has left the table and mother is clearing things away. Here is a nice piece of meat and here are some good fried potatoes and here is some butter, and here is some nice strawberry jam. It is all good to eat and mother wants to keep it until tomorrow. Where does she put it? (A voice, "In the ice box.") That is right. She puts it in the ice box. But why does she put it in the ice box? Why not put it on the back steps where the sun and rain would reach it? (A voice, "It would rot, or spoil or decay.") That is right! It would decay or rot if it was left out in the sun and rain. Now that is just what the food that stays in your mouth does. It rots or decays there. Every time you eat anything a little food is left between the teeth and around the necks of the teeth, and as the mouth is warm and moist, after a while that food rots and decays just as the food from the table would do if mother put it on the back steps.

And when that food decays that way some acids are formed in the mouth, and those acids eat into the tooth. They dissolve that tooth just like sugar will be dissolved in lemonade, only not so quickly. For a long time it will not hurt much, if any. Maybe it will hurt a little some day when you take a drink of cold water but it does not ache. But the acid keeps on eating away at the tooth and the hole keeps on getting bigger and bigger, until one day that tooth just aches like everything. And that is the way teeth decay.

Now, I am going to ask another question. When the week's washing is all ready to be put away, mother picks up your stockings and runs her hand way down inside to the toe. Sometimes she finds a little hole there. When she *does* find a hole, what does she do? (A voice, "She mends it.") That is right! She mends it. Now, if mother misses that little hole and you put on those stockings again and wear them that little hole becomes a big hole and the next time mother sees it she says, "Oh my! I wish I had found that and mended it while it was little for it has been getting bigger and bigger and now it will take a good deal longer to mend." Well, that is just the way it is with these holes the acid makes in your teeth. They just keep on getting bigger and bigger. It is much easier and better to mend them when they are little holes than to wait until they become big ones.

Now, here is something I want you to think about. I have told you the rotting or decay of your teeth comes from the rotting or decay of the food left about the necks of the teeth and in between them. Since that is so, don't you think it would be better to try and get rid of that food before it decays? I do! If you do not get rid of it but just leave it there, after a while you will have little holes in your teeth and they will grow larger and larger, like the hole in your stocking, until they get so large you will have a toothache. And we agree that nobody wants a toothache.

Well, suppose I tell you how you can keep your mouth clean so you will not be so apt to have your teeth decay and not so likely to have toothache.

(The instructor should now give directions and illustrate the use of the thread and tooth brush, as described on page 1827 and succeeding pages of this issue.)

THE LAYMAN'S PART IN PROVIDING FREE DENTAL DISPENSARIES

By WILLIAM H. ALLEN, New York, N. Y.—Director, Bureau of Municipal Research

Layman is defined as *not belonging to a particular profession.* Hence, from the standpoint of ORAL HYGIENE the parent, physician, school superintendent, minister, teacher of physical training, large giver, etc., are all laymen. Their interest, information and giving will determine chiefly whether the United States will spend ten years or a century in providing the free dental dispensaries that only a few dentists and a few laymen even now appreciate as indispensable to a successful mouth hygiene campaign.

While a relatively small fraction of our 93,000,000 adults and children would go to dental dispensaries even if these were made as free as the streets, it is nevertheless true that the existence of

free dental dispensaries is of immediate personal importance to everyone of our 93,000,000 population. This is only one way of saying that there is no person so rich or so blest with health that he does not share the handicap of the person whose efficiency is decreased by bad looking, bad grinding or bad smelling teeth.

Service, even free service, costs money. Dental instruction costs money. Dental repair costs money. Straightening teeth costs money. These benefits are no less costly simply because here and there dentists or school clinics give their services without charge. Each month over a thousand examinations, treatments, fillings, extractions and cleanings are given without charge to school children living near the free dental clinic for children started by Magistrate Barlow and conducted by Marjorie Clark, a health department nurse, at 449 East One Hundred and Twenty-first street, New York. While free to children and without cost to their parents, this service costs private citizens who have been interested by Judge Barlow nearly $4,000 a year and the health department $900. The only part of this clinic service that is not done exclusively by laymen is the dental treatment, and for this the dentists are paid out of funds privately contributed.

At the rate this clinic has been working, New York City would need for its public schools alone about 600 clinics with two chairs each, working six half-days a week in addition to the dentists privately employed. Applying the same proportion to the 20,000,000 school children of the country over 15,000 free dental dispensaries or the equivalent in services would be required for enough examinations, enough fillings, enough extractions and enough cleanings of children in public and parochial schools not now attended to in addition to the educational services of the school nurse who, wherever, possible, sends the child to a family dentist. This means —until we have caught up with the need—30,000 dentists giving six half days a week, or 15,000 dentists working full time each week to care for school children alone in free dental dispensaries, and for only those school children who do not go to a private dentist.

This furnishes the denominator of our fraction. Against it we may compare the less than 100 clinics throughout the country which are available to those school children whose parents are entirely unable or are convinced that they are unable to pay for treatment by private dentists. To change our fraction 100/15,000 into the fraction 15,000/15,000, or to do whatever 100 per cent of the job is—means we must move in three directions and choose one or all of three methods of meeting this opportunity and obligation confronting those who see oral hygiene needs:

1—Free clinics or equivalent in free dental service at public expense must be established for all children unable to employ private dentists, or (and)

2—Free dental service including clinics must be rendered by the dental profession working through individuals and cooperative societies, or (and)

3—The need for repair work and cleaning work must be materially reduced by getting at children when they first come to school and teaching them to save their own teeth by keeping them clean with the least possible aid from dentists.

The fourth possibility which will occur to some—*neglecting this problem of oral hygiene and ignoring unsound, unclean teeth*, I do not accept as an alternative because the American public will not go on indefinitely facing without remedy this enormous gap between what we now know ought to be done for mouth hygiene and the relatively little that is being done.

Of the three alternatives we must for the time being at least choose them all. We cannot get along without publicly supported

free dental clinics. We cannot get along without free service, educational and operative, by public spirited dentists. We certainly cannot get along without education and discipline at school in the precepts and practice of mouth hygiene. This observation suggests another that once having helped the layman to see this problem he is going to get a remedy no matter what obstruction is temporarily placed in the way by personal or factional politics among dentists, such as has hampered developments in New York City, and in spite of traditions built up by the medical and dental profession against organizing medical and dental relief on a large scale.

In this triple headed movement for more money by the public, more service by the dentists and more educational effort by laymen and dentists, the ideal leadership would come from within the ranks of dentists—from the spirit that animates ORAL HYGIENE and the many splendid dentists who are now fortunately to be found in all parts of the country. I forbear to mention any New York names partly because of the increasing honor roll and particularly because of the vindictive persecution to which these unselfish leaders with a broad statesmanlike social policy would be subjected by colleagues whose conception of the oral hygiene movement is condemned into the motto "Rule or ruin dental societies."

Before urging an extension of free dental dispensaries three or four questions need to be disposed of.

1. Are they socialistic?

Free dispensaries are socialistic. So is free air or free trade or free roads or free water or free sanitation or free public lectures or free parks or free education or free police protection. With manufacturers advertising dental floss, tooth washes and powders on millions of pages of magazines and newspapers we are nearing the point where a larger proportion of people will want dental protection and dental treatment than are demanding free public lectures, night schools, or reciprocity. We have gone too far in getting what we want when we want it to be frightened by the bogey socialism.

2. Will they interfere with private dentistry?

That dentists make more money out of people who appreciate relatively sound teeth than out of people who do not know the blessing of sound teeth is almost an axiom. In fact, I believe it would not be hard to prove that a hundred dentists in New York could make money by incorporating free dental service for those who could not afford to pay or even those who prefer not to pay for private service. Nobody makes much money out of a streetful or a townful of people who have not yet learned to keep their teeth in condition.

3. Will they increase or decrease habits of mouth cleanliness?

Nothing promotes good habits so much as a clear picture of the benefits of good habits. A French nurse girl of eighteen had never been to a dentist until last year. She had never been interested in her teeth until persuaded to go to a dentist for the sake of her employer's children if not for herself. The dentist sent her back with a beautifully clean set of teeth. She even learned to smile a new way so as to advertise to the whole world that she had clean, white teeth. It is needless to say that she took more pains in one week keeping those teeth a good advertisement of personal habits than she had taken in the preceding ten years. Ask Miss Clark, of Judge Barlow's clinic, or Miss Crommelin of the Children's Aid Society's clinic what a difference in personal habits immediately followed a good cleansing and explanation by the free dental dispensary.

4. Will they weaken or strengthen preventive measures?

For one unit of interest that school teachers will take in mouth hygiene where there is not a dis-

pensary or a dentist nearby who can demonstrate to the child and his playmates and parents the benefits of mouth hygiene, experience proves that ten or fifty or one hundred units of attention will be given when school instruction, tooth brush drills, etc., are supplemented by the definite remedial and educational services of the dental clinic. *The parent who can afford to pay* the private dentist is stimulated more than any of us feel free to admit *when the teacher or school nurse persuades or compels* attention through a free clinic to those children *whose parents cannot without great sacrifice employ the private dentist.*

Perhaps *free dental service* is a better expression than *free dental dispensary,* because in small communities and in many sections of large communities much better results can be obtained by securing special hours from a large number of private dentists rather than concentrating work in a so-called clinic. Especially in the smaller towns and country districts *free dental dispensary* must come to mean the *itinerant dentist* giving now paid. now free, attention. This means activity not yet inaugurated by state boards of health and state dental councils. Likewise, we are soon coming to the time when all general hospitals will have not only one or more dental chairs and clinics but the dentist going from bed to bed making examinations which time did not permit when the patients were received into the hospital. The point to emphasize is the service, not the place or form of organization.

One concrete suggestion I should like to make to the laymen and dentists who read this laymen's number: namely, that a list of dental needs or a *list of the dental services needed in your community*—your country school district, your town, your city, your state and the nation—be drawn up and in a parallel column a statement of just what proportion of those needs the dentists are now equipped to give through private practice, what proportion through volunteer service in clinics, what proportion through paid service in clinics, how much through clinics in dental colleges, public schools, hospitals, etc., and *how much is not provided for* and *how much is not yet contemplated.*

Such a statement of dental services needed but not yet provided would, I believe, lead promptly to a very large number of gifts, some small and some large, toward the oral hygiene movement. There is nothing about a rich man or about a hospital that makes the rich man want to give one million dollars to a hospital when he will not give ten dollars to promoting the mouth hygiene campaign. The trouble is not necessarily with the hospital or with the rich man. The explanation is that the rich man and knowledge about oral needs have not been brought together. Nothing will give him the picture like a complete statement of the dental needs not yet met.

After each community has done its best for itself there still remains the need for large state and national educational funds which should do in this field of dental hygiene year after year from one end of the country to the other what Miss Dorothy Whitney asked to have done with $10,000 which she gave to the Bureau of Municipal Research under circumstances that illustrate my point. Miss Whitney became interested in the physical needs of school children, particularly in the lack of dental facilities and dental education in New York. When some 500 children applying for work certificates at the department of health were examined, it was shown that only 16 of them did not need dental attention to cost from $2 to $100 at an average cost of nearly $15 per child. Miss Whitney wanted to do something first to benefit these children and then to call the attention of givers and school officers and dentists to this need. After considering the es-

tablishment of one or two dental clinics she finally decided to try instead "making known everywhere and getting done everywhere what is known to be necessary everywhere for the physical welfare of school children." Her $10,000 was spent in promoting the physical welfare program, including a mouth hygiene program, among 500 superintendents and as many editors.

There are, I believe, men and women in every community who will do this kind of service for their own community; men and women in every state who will want this kind of service rendered for their state; and men and women of larger means who when dentists tell this story as dentists are best able to see, will furnish the funds to tackle 100 per cent of this job.

CAVITIES IN TEETH AS INCUBATORS AND CARRIERS OF CONTAGIOUS DISEASE

OTIS B. NESBIT, M. D., President Valparaiso, Indiana, Board of Health

At the beginning of an investigation to determine the best ways of terminating an epidemic of scarlet fever that had infested our city for three years, school inspection was instituted.

After the medical inspection was begun it took just sixteen days to free the public schools of the disease. Then our attention was directed towards a medical examination of the third grade and a dental examination of the third and fifth grades. Our fair city then had seven dentists, one of whom, James R. Pagin, D. D. S., was secretary of the board of education. Because of this position Dr. Pagin thought best not to do any of the examining and we had six rooms to examine and six dentists to do the work.

190 children were examined.

937 cavities were found.

454 cavities were in permanent teeth.

77.9 per cent of the pupils examined had cavities in permanent teeth.

50 had had scarlet fever during the present epidemic and two hundred thirty-eight cavities were found in their teeth.

2 of these had no cavities.

1 had 12 cavities.

2 had 10 cavities.

From this time on we looked to the condition of the teeth as well as the condition of the tonsils and nose, and insisted on all cavities being filled at once upon release from quarantine. I believe these cavities to be fine incubators for all pathogenic bacteria and cavities are known to contain the germs of diphtheria, pneumonia, tuberculosis, influenza and other known infections which enter the body through the respiratory tract, therefore, in as much as scarlet fever, measles, whooping cough, and mumps are believed to be respiratory infections it is fair to presume that the cavities would be equally efficient incubators for these and other diseases.

In the near future I predict a dentist will be on the board of health staff and the teeth of all patients will be filled or the cavities sterilized before release from quarantine.

The work done last year in the schools was done with no expense to the board of education except blanks and was so satisfactory that it is being continued this year and a reasonable compensation is to be paid.

WHAT SUPERINTENDENTS SAY OF DENTISTS' CO-OPERATION

By MISS ELSA DENISON, New York, N. Y.—Of the Bureau of Municipal Research

When in January, 1911, the Bureau of Municipal Research of New York City began its study of civic coöperation with public schools its purpose was to find out what men and women outside the public school system had done for schools besides paying taxes, voting and serving on the school board. A card sent to 500 superintendents of larger cities asked among other things whether they had received outside help in establishing medical or dental inspection and treatment. It asked also for the name of a physician or a dentist who had taken some part in the work. Of the 315 superintendents answering, 116 said that the dental inspection in the schools had been secured largely through outside agencies, probably the dentists of the city. These 315 superintendents sent us the names of 192 dentists and physicians who had done something to help secure inspection and treatment. This may mean any degree of coöperation from a year's volunteer service to one lecture delivered in a school or before a mother's club.

Encouraging as is this widespread interest among the profession, when stated negatively the returns from our inquiry tell the story of 199 cities out of 315 (and among them are some of the most progressive and prosperous of communities) where superintendents cannot say that anything has been done, any interest shown in the subject of dental hygiene for schools. One hundred and twenty-three superintendents named no physician or dentist who had come into direct contact with public schools. This may mean that outside of 116 cities in the United States no work is being done, or it may mean that though there is dental care for school children in other cities, the school men do not know about it.

What the story will be when every superintendent has behind him a strong backing to help secure inspection and adequate treatment for 100 per cent of all children is indicated by what has happened in the cities where superintendents have had such support. The school clinic in Muskegon, Mich., for example, in only two months of its existence, has brought about noticeable changes in the school work of heretofore backward children. The cost, *i. e.*, money value saved, as represented by non-promotions prevented, far exceeded the expenses of the clinic.

Unfortunately it has been true that when a preliminary whirlwind campaign by volunteer dentists has shown a large per cent defective, oftentimes nothing more has happened because the laymen have not taken hold and the dentists have become discouraged. In Saginaw, Mich., the local dental society made an inspection of 4,000 children and found only 25 without defects. Good publicity through the local press and a campaign of dental education by lectures was under way. Just at this time the school board voted money for medical instead of dental inspection and the dentists' work languished. Is it not likely that a lay organization informed and interested would have made it easier to keep on emphasizing dental needs than to stop at the first adverse step by the school authorities?

The story of the Newark

(N. J.) Dental Clinic shows how much needed is the help of organizations like women's clubs, philanthropic societies, in securing funds for equipment and supplies to supplement the volunteer services of the dentists until the city has assumed entire charge. Here the agitation for dental clinics was started by a group of women. The clinics, as organized, were almost exclusively used by school children. With the help of volunteer dentists and the nurse supplied by the Visiting Nurse Association, the clinics were kept going until an appropriation was granted by the city. They were then withdrawn from private management and reorganized under paid dentists. Where lay organizations and school boards do not readily see the advantages of inspection and are over-conservative, about starting free treatment, there is all the more need for initiative and continuous enthusiasm on the part of dentists.

As the physical examination of children is emphasizing the dental need, there is increased opportunity for educating communities dentally by the extension of school clinics as coöperative undertakings for school men, lay organizations and dentists.

FREE DENTAL CLINIC FOR CHILDREN IN THE CITY OF NEW YORK

By JUDGE PETER C. BARLOW, New York, N. Y.

The free dental clinic for children at 449 E. 121st street was opened on January 15, 1910, without any heralding and without any formality. Its success was assured after it had been in operation for thirty days and its continuance now depends on the generosity of its present subscribers and to those friends whose sympathy may be enlisted in the future.

The history of the free dental clinic for children, in brief, is this: The need of free dental treatment for children in the public schools was brought home strongly to a trained nurse, a member of the staff of the Children's Hygiene Division of the Board of Health of the City of New York. After a service of over two years, Miss Marjorie Clark, a nurse in the Division of Child Hygiene, whose daily contact with nearly six thousand children, in Public School No. 39, One Hunlred and Twenty-fifth street and Third avenue, and Public School No. 159, One Hundred and Nineteenth street and Second avenue, showed her the absolute necessity for dental treatment for the poor children in the public schools. Her acquaintance with the home surroundings and environments of the children was thorough by reason of her duties in the Division of Child Hygiene, and she was familiar with the circumstances of the families. She knew that no money would be spared from the household treasury for the care of the teeth of the children, and she knew, too, the dreadful results of the lack of care. Every day some child, often many children, were unable to continue their studies by reason of actual pain from their sadly neglected teeth.

Miss Clark came to the writer and set forth fully the urgent need of a place in Harlem, where the pupils of the two schools mentioned could have treatment; and at the time of the opening of the clinic these two schools were primarily in view, and the clinic was to be like the schools non-sectarian.

The establishment of this clinic

so appealed to the writer that personal letters were written to about one hundred of his friends. These letters showed the need of the clinic, gave an estimate of the expenditure necessary for a year's work, and a fairly complete plan of operations. With these letters was enclosed a letter of which the following is a copy:

DEPARTMENT OF HEALTH OF THE CITY OF NEW YORK.

Office of the Sanitary Superintendent.
55th St. and Sixth Ave.
New York City.

Division of Child Hygiene,
S. Josephine Baker, M. D.,
Chief of the Division.
New York, Dec. 14, 1909.

Hon. P. T. Barlow,
55 East 21st Street,
New York City.

My Dear Judge Barlow:

During the school year of 1908-1909 the inspectors of this division examined 333,000 children in the public schools of New York, and of this number found that 183,000 had defective teeth.

A special examination made of 500 children who were just leaving school and who had applied for employment certificates showed that 489 needed immediate dental treatment.

There is practically no provision in the entire city for caring for these children, as the majority of the families are totally unable to pay the requisite fee for dental treatment.

I heartily endorse the plan of FREE DENTAL CLINICS for the school children. They are urgently needed, and the Division of Child Hygiene will be glad to coöperate to the fullest extent in the work.

Very truly yours,

S. Josephine Baker, M. D.,
Chief of the Division of Child Hygiene.

APPROVED:
Thomas Darlington,
Commissioner.
Walter Bensel,
Sanitary Superintendent.

A second letter was enclosed from Miss Anna W. Kerr, superintendent of Nurses, Division of Child Hygiene, commending the proposed clinic as follows:

"In working among the poor children we find that there are institutions for the correction of every defect that they suffer from except the teeth. Can we send these children out to earn their living handicapped in that way? Our reports show that serious defects of the teeth are on the increase and something should be done. Anything accomplished by the nurses in calling attention to this crying need will be appreciated by every one who is working for the health and betterment of these little ones."

All these letters were mailed on December 20th, 1909. The responses were so generous, so prompt and so general, that within twenty-five days the clinic was opened and in full operation. Quarters were secured in a neighborhood for the children, a neighbor hood inhabited by parents who almost without exception were too poor to pay for treatment. The quarters were suitably furnished, repainted and repapered, the operating room was equipped with two chairs, with a complete set of dental instruments and dental supplies, with hygenic towels, and drinking cups, in fact, with every thing which modern, scientific requirements demanded—and all this was done in twenty-five days, and the work, no longer experimental either in practice or theory, has gone on unceasingly ever since. Full records, consents of parents or guardians, special details, etc., are carefully compiled and filed on suitable blanks supplied by the board of health.

Miss Clark was at once detailed by the board of health as superintendent of the clinic, and continues to give the utmost care and attention to the welfare of the poor children, and only poor children are treated. Should a question arise as to the parent being well enough off to pay, Miss Clark visits the house and assures herself of the inability of the parents to incur the expense and many a funny story could be told of the subterfuges used by parsimonious parents to obtain the free service at the clinic for their children. The ignorance of some of the parents is appalling. The tooth brush is an unknown, unheard of instrument, and tooth powder as rare in their lives as the use of radium in the practice of a country doctor. Many children suffering from tuberculosis are sent from the Mount Sinai Hospital to the clinic to be treated before going to Straus' Preventorium at Farmingdale (it being a pre-requisite for admission to

the Preventorium that the teeth of the children should be in a proper hygienic condition). These treatments are somewhat out of the ordinary and beyond the province and object of the clinic, but the good attained justifies this expansion.

In the Monthly Bulletin Department of Health for May, 1911, Dr. S. Josephine Baker, Chief of the Division of Child Hygiene, in a short article on the clinic, states:

"Neglect of the care of the teeth in childhood, with the resultant malformations of the jaw and often loss of the teeth themselves, is undoubtedly one of the causes of impaired physical efficiency throughout life. The conditions in this regard existing among the school children of New York City at the present time warrants serious consideration. The presence of decayed teeth means improper mastication of the food and the child suffers consequently from indigestion and resultant malnutrition and anemia. Unclean mouths and decayed teeth act as breeding places for many forms of pathogenic bacteria, and the liability to contract contagious disease is greatly increased. As a result of decayed teeth we often find enlarged and sometimes suppurating cervical glands. Local pain and discomfort, with many other abnormal physical symptoms and conditions can often be traced directly to this source.

"The practical results of this condition upon the school progress of the child is worth considering. There is a distinct loss of time in school, due to local pain and discomfort and to the many diseases which find their starting point in the neglect of the mouth and teeth.

"Dr. Leonard Ayres of the Russell Sage Foundation has made a tabulation of the records of the physical examinations of 7,608 children who had been examined by the inspectors of the Division of Child Hygiene. He found that children with defective teeth progressed 6 per cent more slowly in their school grades than normal children and that whereas the average child with no defects completed eight grades in eight years, the average child with defective teeth took 8.5 years to complete the same course.

"The establishment of the free dental clinic for school children is a splendid example of true civic helpfulness."

Dr. Baker also says:

"During 1910, out of 266,426 children examined in the public schools, 94,630 were found to have defective temporary teeth, while 69,620 had more or less serious defects of the permanent teeth. Inspections for these defects were made by physicians, but it is probable that many minor cavities were overlooked as the schools are not equipped with facilities for complete dental examinations."

The work accomplished from January 15, 1910, to January 15, 1911, is as follows:

No. of treatments	5,925
No. of fillings (Root canals 764.)	4,861
No. of extractions (Temporary 927.)	1,499
No. of cleanings	469
	12,755

Since January 15, 1911, the average monthly number of cases has continued to be identical with those of the previous years, and now considerably over 20,000 cases have been treated at the free dental clinic for children.

The expenditures for the year, January 15, 1910, to January 15, 1911, have been as follows:

Dental equipment and furniture	$	383.40
Dental supplies		746.21
Rent	$	564.50
Wages		222.50
Coal, water, insurance, lighting and telephone		213.05
Printing and stationery		103.99
Repairs and sundries		205.16
Salaries of dentists		1,292.50
Salary of nurse		900.00
Permanent installation		$1,129.61
Running expenses		$3,501.70
Total expense		$4,631.31

No doubt, very soon the board of education of the city of New York will be able to show by a tabulated system that the children treated at this clinic or by private operations stand better in their school work than their neglected schoolmates; and that the mental progress of children goes hand in hand with their oral condition, not only *mens sana in corpore sano*, but *mens sana in ore sano*.

In the establishment of this clinic it was sought to show, not by estimated figures, but by actual statistics, the possibility of substantial physical and mental benefits to the children too poor to pay for a treatment. To show from this, the possibility of the establishment of many of these clinics in various parts of the city under municipal care and support.

and to show the advisability of making hygienic condition of the mouth as much a pre-requisite to admission to the public schools as is vaccination, or any other prophylactic requirement. If this requirement can, by legislation, or otherwise, be put into effect the growing generations of the future children of this metropolis will be benefited to an amazing extent, morally and physically, and the generous supporters of the clinic may well point with pride to the modest institution which has accomplished so humanitarian a task.

NUGGETS OF WISDOM

Decaying teeth spell dyspepsia.

Diseased teeth and unclean mouths are the most frequent causes of indigestion. Chew your food well. *The stomach has no teeth.*

There are ten million school children in the United States suffering from the direct effect of decaying teeth and unsanitary mouths.

Is your child among them?

Forty per cent of the absentees from school are caused by toothache. It has been shown that children with decaying teeth are six months longer in completing the eight common school grades than are children with clean mouths and sound teeth.

Would it not pay to take care of the children's teeth?

Neglect of the temporary teeth means crooked and rapidly decaying permanent teeth. Sound teeth properly used result in good health. You save money by looking after your teeth closely. Today's small filling saves tomorrow's large filling.

How about your child?

As a result of bad teeth and unsanitary mouths the physical development of the child is seriously retarded. The more the physical development is disturbed, the less in general is the mental capacity. The worse the teeth, the worse, as a rule, is the school standing.

Proper care of the mouth and teeth is one of the most important of all the measures that are taken for the protection of the human body, and a failure to give them care is, in my judgment, the direct cause of more disease in the human family than any other single cause.—Major W. O. Owen, M. D., Surgeon United States Army.

A great handicap in tuberculosis is defective teeth, which make it impossible to properly masticate and assimilate sufficient food for the body to throw off the disease. A well nourished body is of the first importance in the prevention and treatment of the Great White Plague.

A foul mouth and decaying teeth, particularly in children, decidedly increase the chances of catching contagious and infectious diseases, as scarlet fever, diphtheria, measles, and tuberculosis.

A clean mouth will do much to prevent tubercle bacilli from gaining a foothold in the body.—Henry G. Langworthy, M. D.

The grinding power of sound natural teeth is about two hundred and fifty pounds.

Artificial teeth about twenty-five pounds.

Why don't you save your teeth?

There is not one single thing more important to the public in the whole range of hygiene than the hygiene of the mouth. If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say

defective teeth.—William Osler, M. D.

Decaying teeth do not permit of perfect mastication; imperfect mastication is the open door to malnutrition; and malnutrition is one of the greatest factors in all diseases.

Did you ever hear of the conservation of natural resources? Teeth are quite as much a natural resource as are trees and waterfalls. Is not the care of the children's teeth a community responsibility?

What are you doing for your child?

GLOSSARY

ABSCESSED TOOTH. A tooth having a collection of pus somewhere about its root, usually close to the end. If the inflammation is very severe, with much pain, swelling, and fever, it is called an "acute abscess." If the inflammation is less severe but long continued, it is called a "chronic abscess." Abscessed teeth are sometimes wrongly called "ulcerated teeth."

ADENOIDS. Gland-like tumors in the back of the nose over the soft palate. They stop up the back of the nose more or less, according to their size, and prevent free breathing through it. They are most apt to appear in young children.

ALIMENTARY CANAL. The body canal, beginning at the lips, in which food is digested. It includes the mouth, the pipe or canal leading from the mouth to the stomach, the stomach, and the bowels.

BABY TEETH. See deciduous teeth.

BICUSPID TEETH. The fourth and fifth teeth on each side, in the permanent set, counting from the middle line of the face. So called because they have two cusps.

CALCIFIC DEPOSITS. Deposits forming on the teeth, first about the necks but gradually covering them more and more. The deposits form first on the insides of the front teeth below and the outsides of the first and second molars above, but if neglected they may spread all over the mouth. The deposit comes from the saliva. Often called "tartar."

CALCIFY. To change into a bone like substance. In dentistry, applied to the formation of the teeth.

CANINE TOOTH. See cuspid.

CARIES. To decay or rot. In dentistry, decay of the tooth.

CROWN. That portion of the tooth in healthy mouths, which projects from the gum tissue. That portion which can be seen.

CUSP. A prominence, point, or protuberance.

CUSPID TOOTH. The third tooth on each side of the middle line of the face, in both sets of teeth. So called because it has one cusp. The upper cuspids have been called "eye teeth" and the lower cuspids have been called "stomach teeth," but they have no more relation to those organs than the other teeth. Also sometimes called "canines" owing to their resemblance to the tusks of a dog.

DECIDUOUS TEETH. Those which are shed. The first set of teeth, of which there are twenty, ten above and ten below. Sometimes called "milk teeth," or "baby teeth."

DENTIFRICE. A powder, paste or liquid used in cleansing the teeth.

ERUCTION. Belching.

ERUPTION. In dentistry, the crown of the tooth coming through the mucous membrane from the jaw-bone, so it is in sight.

EYE TOOTH. See cuspid.

HYGIENE. The science of keeping in good health.

IMPACTED. In dentistry, a tooth which cannot erupt owing to lack of room or other causes.

INCISOR. The first two teeth on each side of the middle line of the face, in both sets of teeth. The middle ones are known as "central incisors" and the others as "lat-

eral incisors." Called "incisors" because they are used to cut, or incise, food.

INFECTION. In dentistry, disease producing bacteria getting into living tissue.

INTESTINE. That portion of the alimentary canal below the stomach. The bowels.

MASTICATE. Chew.

MILK TEETH. See deciduous teeth.

MOLAR TEETH. Molar, a mill stone. In the first, or deciduous set of teeth, the fourth and fifth teeth on each side counting from the middle line of the face. In the second, or permanent set, the sixth, seventh and eighth teeth on each side, known as the "deciduous first—or second—molar," and the "permanent first or second, or third molar." In the permanent set often called "the sixth year molar," "the twelfth year molar," and "the wisdom tooth."

MUCUS. A secretion from the mucous glands in the mucous membrane.

MUCOUS MEMBRANE. The moist, red covering lining the alimentary canal. It begins at the lips, where the skin leaves off, and covers the entire mouth and its contents, except the crowns of the teeth.

NERVE OF TOOTH. See pulp of tooth.

ORAL. Of the mouth, or relating to the mouth.

ORTHODONTIA. The correction of irregular teeth. Orthodontist. One who practices it.

PERMANENT TEETH. The second set of teeth, of which there are thirty-two, sixteen above and sixteen below.

PROPHYLAXIS. The guarding against, or prevention of, disease.

PULP OF TOOTH. The soft substance in the middle of a living tooth. It is composed of a gelatine like material, filled with cells, blood vessels and nerves. Commonly called the "nerve."

PURULENT. Consisting of, or looking like, pus.

PYORRHOEA ALVEOLARIS. A disease of the gums and soft tissues about the roots of teeth. The gums get red and inflamed, pus usually forms, and the soft tissues and bone may be destroyed until the tooth gets loose. The principal causes are calcific deposits and dirty mouths. Sometimes called Rigg's disease.

RESPIRATORY. Relating to the respiration, or breathing.

RIGG'S DISEASE. See pyorrhoea alveolaris.

ROOT. That portion of a tooth in a healthy mouth that is imbedded in the jaw-bone. That part which cannot be seen.

SALIVA. Spittle.

SALIVARY GLANDS. The glands or tissues which secrete saliva and pour it out into the mouth.

SANITARY. Hygienic, healthy.

SEPTUM OF NOSE. The partition or wall between the right and left sides of the nose.

SIXTH YEAR MOLAR. See molar teeth.

STOMACH TEETH. See cuspid teeth.

TARTAR. See calcific deposits.

TONSILS. Two oval bodies, one on each side of the tongue, well down in the back of the mouth and beginning of the throat. They can hardly be seen unless diseased.

TWELFTH YEAR MOLAR. See molar teeth.

ULCERATED TOOTH. See abscessed tooth.

WISDOM TOOTH. See molar teeth.